

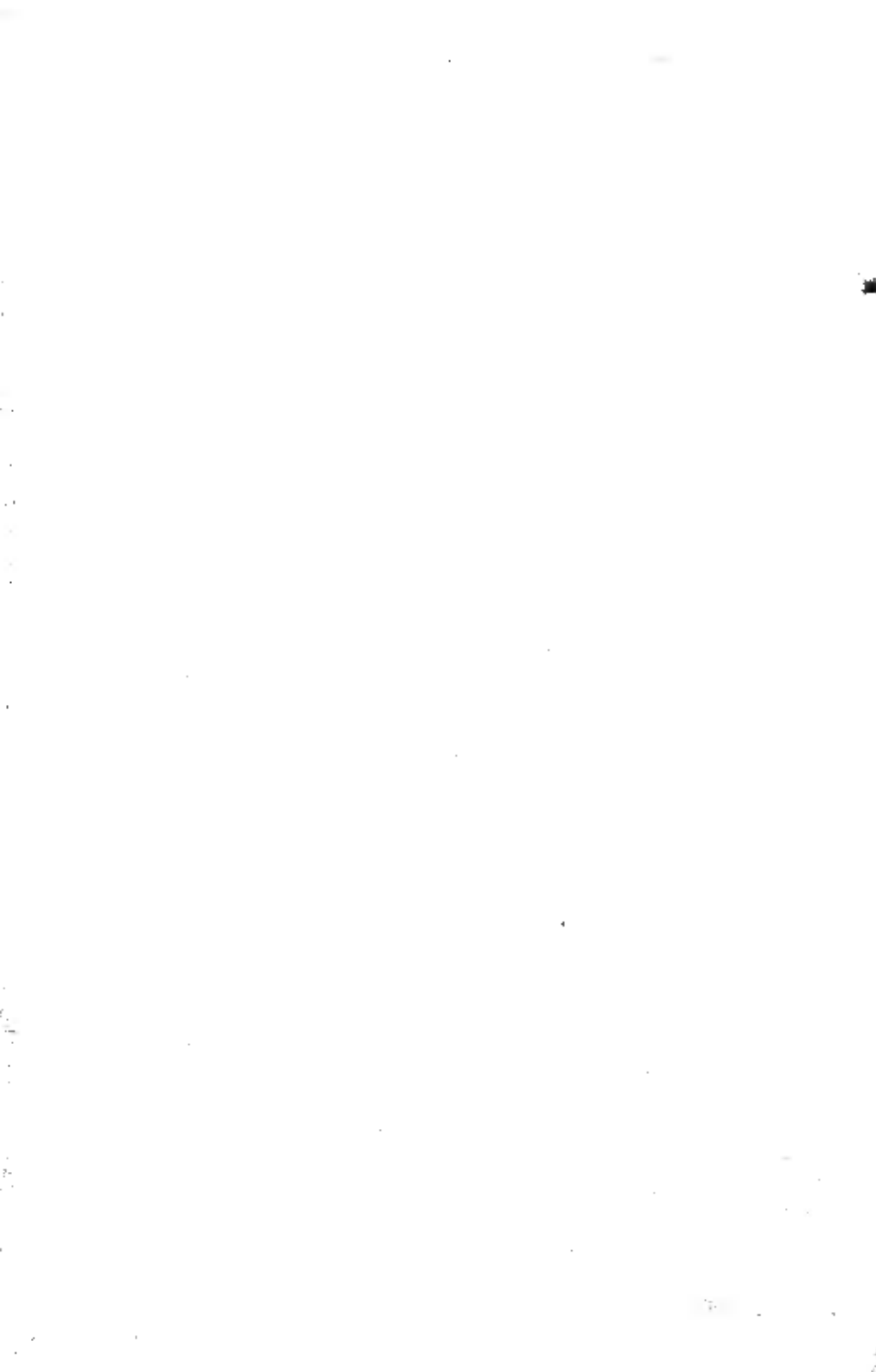
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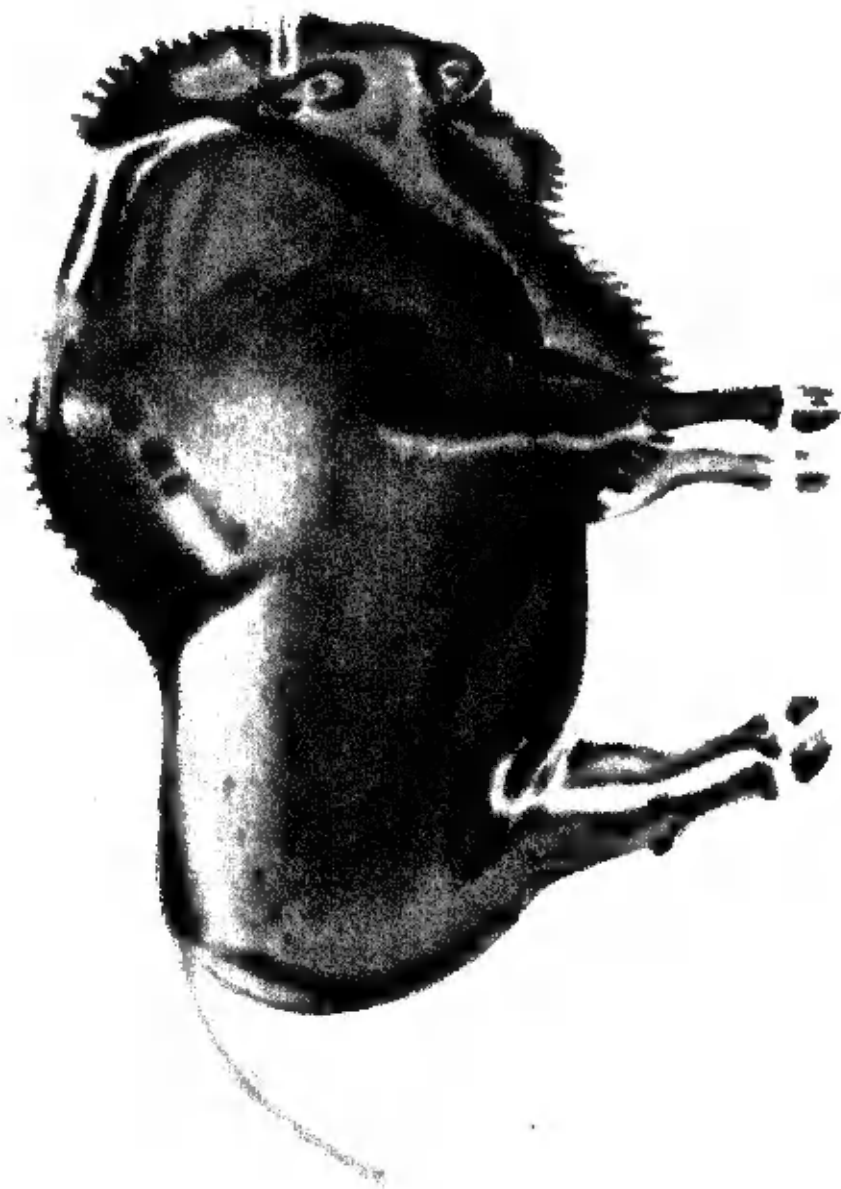
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PRELUDE TO HISTORY



One of the finest of the polychrome bisons from the Altamira cave.

(After Breuil)

PRELUDE TO HISTORY

*A Study of Human Origins and
Palaeolithic Savagery*

31253

by

ADRIAN COATES, M.A.

with a Foreword by
GLYN E. DANIEL

WITH 3 PLATES, 23 TEXT
ILLUSTRATIONS, AND 5 MAPS

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Theories are built upon facts; and conversely the reports upon facts are shot through and through with theoretical interpretations.

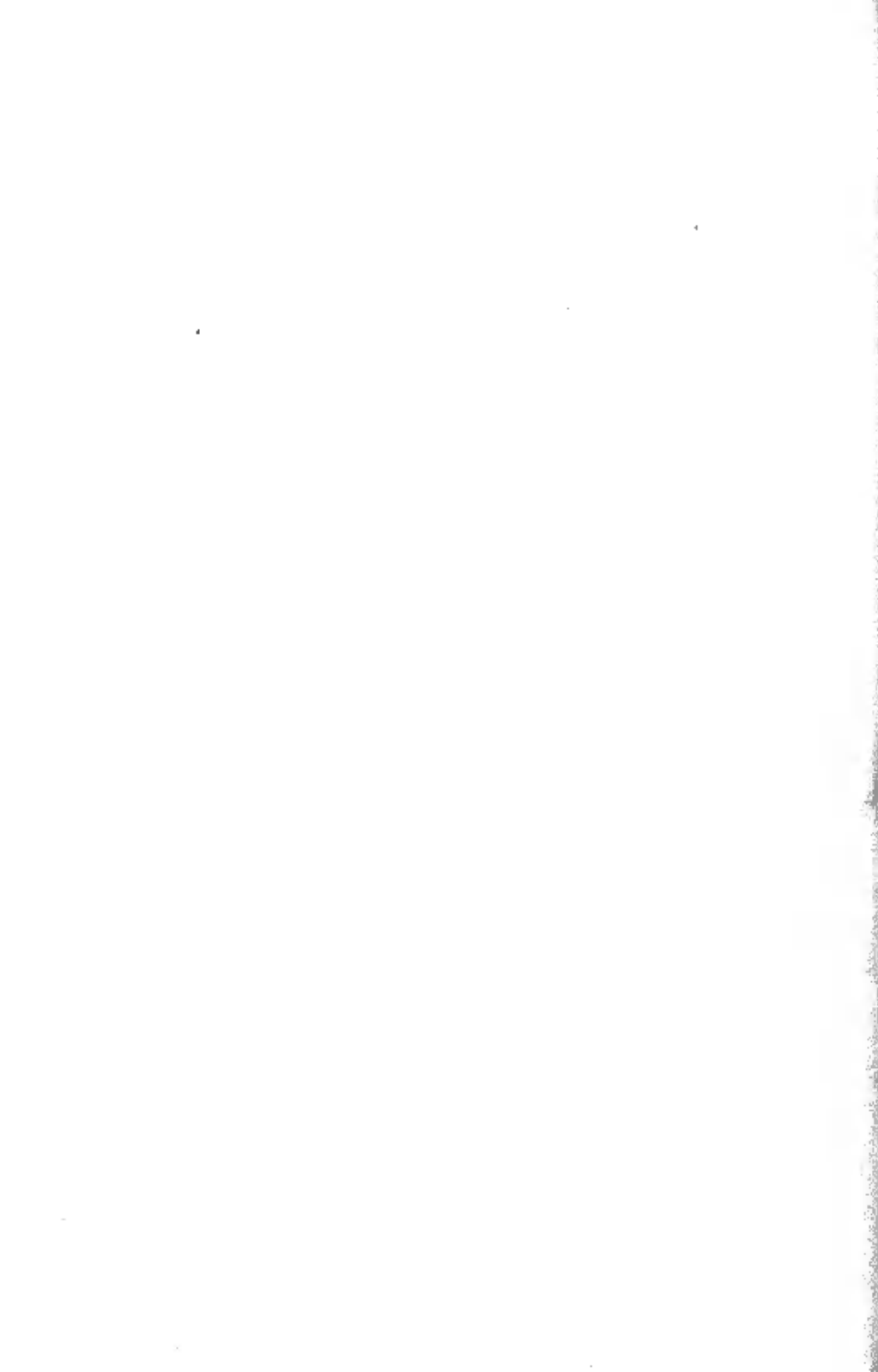
This notion of historians, of history devoid of aesthetic prejudice, of history devoid of any reliance upon metaphysical principles and cosmological generalizations, is a figment of the imagination.

The historian in his description of the past depends on his own judgment as to what constitutes the importance of human life.

A. N. WHITEHEAD, in *Adventures of Ideas*.



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FOREWORD

by GLYN E. DANIEL, M.A., PH.D., F.S.A.

*Fellow of St. John's College, Cambridge, and Lecturer in
Archaeology in the University*

THE increase of interest in prehistoric archaeology has quickened the demand for clear, authoritative but popular statements of our present knowledge of man's earliest past. There are, broadly speaking, two great phases in the long story of man's cultural evolution before writing enables us to call his past history in the strict sense of that word. The first began with man's earliest tools, some three quarters of a million years ago, and lasted until the discovery of the arts of agriculture and pastoralism some ten to eight thousand years ago turned man from a Food Gathering Savage to a Food Producing Barbarian. This Food-Producing (or Neolithic) Revolution ushered in the second great phase in man's prehistory—a phase which saw laid the prehistoric foundations of civilization and which came to an end when it developed into or was superseded by the historic literate urban civilizations of Egypt, Mesopotamia, India, China, Greece and Rome. Mr. Coates's concern in this book is with the first of these two great phases—that of Palaeolithic Savagery—which took up by far the greater part of man's life hitherto on the earth.

The small band of professional prehistorians provides us from time to time with vulgarizations of their knowledge but the demands on them of research, teaching, and administration often leave little time or energy for the important work of summarizing their results for the general reading public. Moreover, popular statements are not always easy to do; scholarship and a flair for simple and unpatronizing exposition are by no means coincident. Then again popular books by professional scholars, even when they do occur, rapidly go out of print and inevitably out of date. It is already nearly two decades since the first publication of M. C. Burkitt's *The Old Stone Age*, and L. S. B. Leakey's *Adam's Ancestors*, those two standard introductions to palaeolithic

savagery. The present book by a non-professional archaeologist who has made it his business to keep thoroughly abreast of all developments in Palaeolithic archaeology, is thus most welcome. Mr. Coates has not written a text-book; nor did he set out to do so. He has, to my mind, written a readable, well-informed and up-to-date general account of the subject. He is equally at home in discussing the evolution of man's material culture, or his physical development, as in considering the sociological and psychological implications of Upper Palaeolithic art.

But this is not merely a popular book. Mr. Coates is by no means merely a good digester of other men's facts and theories. He has much to say of an original nature—as for example in discussing the question of how to explain the similarities between various Palaeolithic tool families. And he is at his best and most stimulating when relating Palaeolithic studies to human history in general. His introduction on 'History and the Prehistorical' is of great interest and deserves careful reading by far more than those who will ■■■ this book as an introduction to the study of human origins and palaeolithic savagery. Here emerges not only Mr. Coates the prehistorian, but Mr. Coates the philosopher, and the student of the method, content and aims of history and archaeology. Good, thoughtful, thought-provoking writing on the methodology of prehistoric archaeology is unfortunately very rare; the archaeologist is somewhat content to sit on the dunghill of the past, or to excavate it meticulously—and not know why. I welcome Mr. Coates's comments on this subject although his trenchant criticism and clear thinking may annoy many archaeologists—those whom he calls 'archaeologists *pur sang* . . . concerned solely with the non-documentary remains of the past.' He distinguishes between them and the archaeologist-historian, and exposes the shallowness of the claim that the facts of the archaeologist are objective and real when compared with the literary falsehoods of the documentary historian.

Mr. Coates's book is ■ good example of the work of the archaeologist-historian; but I suspect that his preliminary essay, which in any case stands by itself, will be read long after his survey of Palaeolithic Savagery has served its purpose for a decade or two, and been superseded by other books. As a thoughtful study of history and the prehistorical, and as a good introduction to Palaeolithic Savagery, I welcome this book and wish it well.

PREFACE

MANY excellent books have recently been written on the subject of Early Man, most of them by expert archaeologists. But the subject is ■ inexhaustible one. People go on writing books about Shakespeare year after year, and I hope will continue to do so; and there are even better reasons why they should go on writing books about our prehistoric ancestors and the origins of mankind. For not only does the addition of new knowledge continually alter the perspective of our view, but the subject itself is of such vast and various significance that it can be treated in any number of ways; or so it seems to me, who am not a professional archaeologist, but have always taken a deep interest in archaeological questions, ■ in the several related topics of evolutionary biology and palaeontology on the one hand, and of ethnology, anthropology and psychology on the other, both for their own sake and for their philosophical implications. I do not know whether or not it is a recommendation for a book to say that it was written primarily for the author's own satisfaction; but it was in fact the desire I had to orient myself philosophically to the whole context of prehistoric humanity that impelled me in the first place to make a special study of the subject.

Perhaps my mention of the word 'philosophy' may render me suspect. But I hasten to say that this is no 'Philosophy of Prehistory', if such a thing were conceivable. Facts, we know, are sacred; or at least, as far as I am concerned, they are too absorbingly interesting in themselves to be turned into ■ peg for propagating private or political dogmatisms. If I am neither a Freudian nor a Marxist, one reason is that I cannot tolerate the monotony and false simplicity of such all-sufficient theories. My intention has rather been to achieve what may be called a synoptic view, by considering separately and in turn the most recent discoveries in the archaeological field, and the theories of the biologists, psychologists and anthropologists about the origin and nature of man, and of human society. But while I have tried to deal with the facts and theories in each context separately and for their own sake, they are all, of necessity, brought into the focus of

an individual point of view, which I have given particular expression to in my Introduction and Conclusion. The prehistorical includes whatever precedes the historical in the temporal series; but there is also the question of what precedes the historical in the logical sense, of the presuppositions, that is, with which we approach the context of historical (and prehistorical) facts. My title 'Prelude to History' may be taken in both the temporal and logical senses; for I have tried to combine a survey of the prehistoric field with an essay in what I can hardly avoid calling philosophical interpretation.

This is not a book for the specialists and experts, though I hope that they will not despise it. It is written for people like myself who, without being specialists in any particular discipline, are curious about all sorts of things, about the origin of mankind, the meaning of history, the theories of Freud and Frazer, the significance of race, as well as the industries and art of our remote palaeolithic predecessors, and who wonder how all these different topics fit together to make a coherent whole. Nor have I been content with a mere paste-and-scissors patchwork of the views and findings of other people, but have dared, within the limits of my competence and knowledge, to formulate throughout opinions of my own. Indeed ■ work of vulgarisation, ■ the French call it, would hardly be possible in a field where there is of necessity so much uncertainty and disagreement; or if possible, it would be insipid. Anyway it is not what I have attempted. How far the limits of my competence and knowledge extend it is for others to judge; but if I have sometimes been overbold in my theories and criticism, I would plead in extenuation that over-caution is the less amiable fault, and that while in any special field of study there are many questions on which the layman is incompetent to express an opinion, there are others to which ■ more general logical criterion may be applied, and others again of such a doubtful and fundamental character that we must needs choose for ourselves between opposing theories. This applies of course much more to the contexts of psychology and anthropology than to those of archaeology and palaeontology; and as it is my propensity to dwell on the more general and logical aspects of any subject-matter, so I have felt myself most at home where, as in the Introduction and chapters VIII and IX, my thought has been able to range most widely. But I hope also that in the chapters devoted to the survey of palaeolithic industries and the evolution of *Homo Sapiens* I have been able to combine a pinch of

originality with a reasonable standard of modesty and correctness; and here at least the glutton for detail will find quite a lot to get his teeth into.

A few words on the subject of the illustrations. Any attempt to illustrate fully every discussion of physical types, industrial traditions, etc., was an obvious impossibility, while a haphazard selection of the extremely abundant material, much of which has been reproduced again and again, seemed rather pointless and unsatisfactory. So I have aimed at giving what illustrations there are a definite character, and one likely to be of most value to the unspecialized reader. They are of three kinds. First, I have brought together on a few pages a large number of fossil remains (31 skulls and 4 jaws) from all over the world, which, though they are only small outline drawings showing but a single view, will nevertheless provide some opportunity for visual comparison, and for checking the discussion in the text. Secondly there is a series of drawings of tool types and assemblages, the purpose of which is not so much to illustrate particular points in the discussion as to provide a kind of visual supplement to the account I have given of the development of industrial techniques and traditions. To this end I have devoted more space to the less familiar African and Asiatic industries than to the European, and given examples of typical assemblages as well as of types of individual tools. Also, in order that they may be the more readily compared in terms of size as well as of shapes and finish, all the tools have been reduced to the same scale of ' $\frac{1}{2}$ linear'. Since there are several books devoted to the subject of palaeolithic art, and the most noteworthy examples have been frequently illustrated, the illustrations of this third kind have been limited to five typical and widely contrasted 'masterpieces', including one from the recently discovered Lascaux cave; and I am particularly glad to have been able to use as a frontispiece the colour plate, after Breuil's drawing, of one of the finest of the Altamira bisons, taken from the late Henry Fairfield Osborn's *Men of the Old Stone Age*. This may be familiar, but it can hardly be too familiar; and I feel that it as it were illuminates the whole of my book, and provides its possessor, whatever may be thought of the rest of it, with something of sure and lasting value.

All the illustrations I owe to the courtesy of authors and publishers who have allowed me to make use of their material. A detailed acknowledgement of my debts in this respect is made elsewhere. But I have three more special obligations to acknowledge

in conclusion. My principal thanks are due to Professor C. F. C. Hawkes, who spared the time to read through the manuscript of a stranger, and gave me the encouragement of his advice and criticism. In particular it was due to his criticism that I revised my views of the Solutrean episode, and included some account of the recently discovered Fontéchevade fossil. It is hardly necessary to add that for the statements in the text, on these as on all other topics, I am wholly and solely responsible. Secondly I wish to express my thanks to Mr. H. M. Davidson of Bridgewater for making the drawings of skulls, etc., for figures 1, 7, 8, 9, 14 and 15. And finally I have to thank my publishers for their help and kindness, especially in meeting so readily my rather pernicky requirements in the matter of illustrations.

A. C.

ACKNOWLEDGEMENTS

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Map I is taken from a map in Vol. I of *The Cambridge Ancient History*, by courtesy of the Cambridge University Press.

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INTRODUCTION

HISTORY AND THE PREHISTORICAL

LET US TAKE a stand at the top of some overlooking hill. The vista stretches away in a diminishing perspective from the slope of ground beneath our feet to a dim far-off horizon. In the foreground of our view people, trees, even leaves and blades of grass, appear 'life-size' in all their detail. Beyond, a wide stretch of country is seen in more summary fashion, its human inhabitants rarely distinguishable as individuals. And as our gaze travels further afield, so the view becomes more summary and doubtful, and the farthest zone of all is a vague blur of country dimly guessed at through the haze of distance. Similarly if from the hill of present thought we gaze back upon the past, the vista of history stretches back in diminishing perspective from the fullness and familiarity of the contemporary scene through the more summarily and distantly comprehended centuries of the past, back to a vague horizon of primitive life and thought and humanity.

How far is the view in space comparable with the view in time? In other words, what is the status of history in relation to the natural world of the scientist? That is the question which inevitably confronts us as soon as we start reflecting upon the nature of history; and particularly so if we approach it from the direction of the prehistorical, since here is a context occupying an ambiguous position between history proper and the sciences of biology, anthropology and geology. If it is to be regarded as an extension backwards of the historical context, then these sciences, and by implication the other non-human sciences ■ well, are subordinated to the categories of history and human action; but if we make the contrary assumption, then history and humanity are subordinated to the reality or natural world of the scientist. The question to be answered is not merely one of method in a particular line of enquiry: it is one which involves the most fundamental problems of life and philosophy, and the answer we provide intimately affects our whole outlook. Obviously the philosophical question cannot be fully or adequately discussed within

the compass of an introductory essay; but I wish to draw attention to its central importance in any discussion of the relation of history to the prehistorical, and by means of it hope to clarify what I believe to be the correct view of that relation.

The comparison may be used to illustrate, in the first place, the character of history as standing between, and compounded of, the past lives and actions of men, and our present thought and view of them. The view we have from our hill is of real things, and only has meaning in relation to that reality; but its character also depends upon our power of vision, on the site we occupy, and the condition of the intervening medium. So too our historical view presupposes and is related to a past actuality of other times and lives, and in virtue of that relation we speak of historical knowledge. But our thought and knowledge is conditioned by the character of the intervening medium, that is, of the surviving records of the past, and by our individual point of view. Moreover, while we can move about from point to point in space, we cannot similarly change our point of view in time; ■ that our view is always the contemporary view, and every age has its historians, who both reflect, and to a greater or smaller extent contribute towards its practical and political and religious point of view. This explains why the word 'history' is itself used ambiguously to denote either 'the study of the past' or 'the past which is studied'; since the study of one age becomes the past which is studied of another, and the past of which there is ■ surviving record is outside history, in both senses of the word. If we wish to distinguish what is accurate and scientifically valid from what is false and partial and inaccurate in history, we must do so, keeping the terms of our metaphor, as the difference between a keen and accurate and a distorted and short-sighted view. Science, we may say, has lately provided the spectator with notable new aids to vision, which have greatly extended its range, and increased the accuracy of his charting. But he is still anchored down to the particular point of view of his age and country and individual personality.

History, then, is relative in two ways, first because our historical knowledge is not of the past in its living integrity, but of its fragmentary records, and secondly, because our view is always local and personal. But let it not be supposed that history is therefore inferior to other branches of knowledge. For relativity, in ■ form or another, is the general characteristic of all thought and knowledge. The only absolute sort of fact is the

bare, particular fact, and the only absolute truth is the abstract, mathematical truth. As the field of our thought and knowledge widens, the more human-subjective elements enter into it, until eventually the nature of the universe is found to coincide with our experience of it. If history is less 'objective' than the sciences, that is because it is more comprehensive or synoptic than any other form of knowledge.

A second way in which the vista in time resembles the vista in space is in presenting us with a diminishing perspective, so that the much more extensive background bulks less than the narrower foreground; and while that is bewilderingly full of detail, the remoter centuries take — a more regular pattern. But it is here that we become conscious of the essential contrast between the two contexts, namely, that in one we are concerned with objects, and in the other with subjects. Even when the scientist is concerned with persons he treats them, as far as possible, objectively, whereas the historian is always ultimately concerned with individual or collective mind and agency and character: that ■ take to be the fundamental postulate of any valid historical point of view. The contrast may be formulated under two heads: first, that the object has its identity imposed upon it by the knowing mind, while subjects have their own internal identity as selves or agents; so that they (or we) exist independently of anyone else's thought-relation to us, whereas the independence of objects can be defined only in terms of our spatial or spatio-temporal relation to them; and secondly, that our relation to objects or physical reality is a one-way knowing relation, whereas our relation to subjects or other selves is a reciprocal relation, not only of knowledge but of action and feeling; and so also our relation to our human past is not only that of knower to his object of knowledge, but that of the present generation to its ancestors, or heritor to his inheritance.

Let us consider the contrast still in terms of our comparison. In the vista in space the foreground is occupied by a great number of small particular objects, stones, twigs, leaves and blades of grass, the middle distance by larger objects such as fields and trees and houses, and the background by still larger agglomerations, villages and hills, lakes and plains. Similarly in the historical vista the foreground is occupied with a great host of individual persons and particular events, the middle distance by more massive movements of nations and faiths and empires, with here and there a few leaders eminent above the crowd, and the

background by a vague swirl and pattern of innominate peoples and cultures. Now in the one case it is clear that stones, fields and hills all have the same logical status, their definition being determined in all cases by the nature of our thought and experience. But the individual person is not only a real object, but a self-existing independently or transcendently of all other thought and experience; and it is the activity of individually existing selves or persons that supplies the transcendental basis of our historical reality, and of our more general historical concepts. Thus while the historical vista (which we may also call the historical record) may contain facts or objects of all degrees of generality or impersonality, their transcendental reference is always to personal existence and agency, and the facts are the media whereby we enter into thought-relation with the irrecoverable subjective existence of the past and dead generations, or of existing human groups and congeries.

If we accept this view of historical fact--and I believe that there is no other view which does not involve logical confusion and self-contradiction--then we have an explanation of one of the prime difficulties of historical thought, namely, the relation between personal agency and the so-called 'impersonal factors' in history. It is the difference, I suggest, between a cause in the fullest sense of the word, and a reason or necessary relation. A cause, according to my definition of the term, is a particular origination of events in time; the basis of its definition is provided by human agency. A reason is a logical ordering of particulars under a general rule: the basis of its definition is provided by the ideas of identity and uniformity. The scientist seeks out and establishes his 'laws of nature', which are the observed uniformities of experience enabling him to explain and predict particular occurrences, and to formulate rules of procedure. Similarly the historian may arrange the multifarious and exhaustless data of history into various patterns, in terms of geography and climate, economies, cultures, races and so on. He may trace historical parallels, generalize the events of different ages and countries under a common head, and formulate 'laws' of social and economic development. So far as these generalizations fit the particular facts and adequately cover them, they may be accepted as true and valuable, though they can never have the accuracy of physical laws, nor be used to predict the future. They are essentially logical formulations or summaries of our historical knowledge: to regard them instead as transcendental agencies or

'factors' originating the course of events is to be guilty of 'unnecessarily multiplying entities' in old Ockham's phrase, that is, of hypostatizing our own concepts as independently existing agents. Generalizations and abstractions provide an explanation of events: only persons can be agents.

To illustrate this fundamental point let us take the case of 'geographical factors'. Now it is obvious and indisputable that there is a necessary relation between human activity and the physical environment. Fishing can only be carried out along the borders of seas and rivers, herding on open grasslands, agriculture by irrigation where there are suitable rivers. Thus we may say that the soil and climate impose a particular pattern of life on the inhabitants of every part of the world, and the whole history of mankind can be written in general terms of such geo-physical correlations, from the time when the earliest flint-knappers settled on the open, flint-bearing chalk-lands which supplied both the game they hunted and the tools to hunt with, to the present day, when the greatest agglomerations of population are found in the areas richest in deposits of coal and iron ore. But while such ecological studies may illuminate and explain the course of past history, they do ■ only in general terms of the possibilities and limitations of the given human situation; and to suppose that the human activity is caused or given by the physical conditions which frame it is like supposing that because the form of a work of art is conditioned by the material of which it is composed, the wood or stone or marble rather than the sculptor is the cause of it. Granted that there is ■ necessary relation between the English industrial revolution and the geography and geology of the British Isles, it is left for the historian to explain why that revolution took place as and when it did. Similarly the climatic and geographic conditions of the Greek peninsula and the Aegean have been the same throughout the centuries; but the *floraison* of the Hellenic genius was a single and unique occurrence. Again, if the past course of human history could be deduced from ecological 'laws', it would follow that the future could also be foretold; and this claim has indeed been made. It is a mistaken one. For instance, large and still untapped resources of coal or metal here or there may indicate the possible locality of future industrial development and the shift of economic power. But whether these possibilities are realized depends on the unpredictable course of political events, on relative standards of technical ability, and on the possible development of ■ yet

unguessed sources of power which will make all existing ecological maps out of date.

But if it be granted that the physical environment conditions but cannot cause human activity, perhaps it may be argued that geography and climate still in a deeper way are at the root of all human action, in that they control the physical development and character of human groups; that though the English coalfields and coastline are not the originating cause of English commercial development, the English climate is, which bred the English type of physique and character. Here at least we have, what is absent in the other case, the time element, which is an essential part of the concept of causality, the physical conditions leading by a gradual process of adaptation to a biological or physiological result. But what we still have not got is the element of agency or activity. Here, as in any other physical series, there is merely a succession of events or phenomena linked together logically and in space-time, each one of which is cause or consequence according as one looks forward to what follows or backward to what precedes. Agency, on the other hand, implies ■■ originative focus of activity lying outside the series; and when this conception, which is proper only to the field of human action, is transferred to the objective world of natural events, we get that personification of natural uniformities or scientific laws which constitutes the fallacy of materialism. In other words, while we must admit a necessary relation between climate and the character of local human groups, to say that such conditions 'control' their development is to speak in metaphor; for control implies the existence of a personal agent. In fine, of the three constitutive elements of the concept of causality, necessary or logical connection, temporal succession, and agency, the first and second only are proper to the field of nature and scientific explanation: all three are combined only within the field of human action and history.

"People do not live at economic stages. They possess economies." So writes Professor Daryll Forde in the concluding chapter of his *Habitat, Economy and Society*; and it is unnecessary for me to repeat the arguments he there uses against the theory of economic determinism—a theory which ■■ suppose is held to-day only by those for whom it is an unarguable article of the Marxian faith. But there is a more general point I should like to make. It is the fashion nowadays to deride the old 'drum and trumpet' kind of history, and to assert that what really matters are the social and economic changes, and the technical and scientific

advances, which occur from age to age. Thus, presumably, the most important feature of the last fifty years would have been, according to the economic historian, the crumbling — metamorphosis of the capitalist system, or according to the technologist the development of scientific inventions, or according to the ecologist the shift of economic power from western Europe to America. As against these or any other such 'scientific' interpretations of events I venture to suggest that the most important feature of the last fifty years has been the two German wars, which have themselves been a main cause of all these other revolutions, and whose effects have been directly and indirectly felt in the lives and happiness of hundreds of millions. The attitude to history of which H. G. Wells' *Outline* is the popular expression embodies not so much the wisdom as the wish-dream of the present-day scientific worker, who, because he hates war and the personal ambitions of politicians, pretends that 'in the long run' war and politics are unimportant. The German wars are not, by any scale of values, unimportant; and their — are to be sought, not in any economic or other generalization, but, primarily, in the actions and character of a small circle of individuals, secondarily, in a much wider circle of persons and events and decisions over the preceding decades, and lastly in the course of German and European history through the nineteenth and preceding centuries.

History in the making, or the actual mesh of events, is in the main, and apart from the purposive control of events by individuals, alogical, in the same way and to the same extent that life itself is. As individually purpose and reason are subordinate to will and character, so history at large is the product and expression of the tangled wills and strivings of humanity eternally renewed and incalculable, capable of all evil and all good. But history as thought and recorded necessarily takes on the logical characteristics of thought; and in ordering the tangled mesh of events in terms of causal succession in time and place, the historian has to employ terms of all degrees of generality according to his context and the available data. Narrative in terms of individual agency is indeed possible only to a very limited extent even in the contexts where our knowledge is fullest, because the continually shifting interplay of many minds and wills can only be grasped in a comparatively gross and rigid form, and even in biography many of the events reacting on the principal character have to be put in general terms. This general form of human agency, which is the

historian's mainstay, may vary in extent of time and numbers from 'the sense of the meeting' or a Catilinarian conspiracy to such vast human movements or agglomerations as Germany or the French Revolution or Christianity. But however wide the term may be in its extension, it still implies, or should imply, ultimate reference to persons, whose minds and activities are thus summarized in gross; and even so, when the primary reference is not to people themselves but to some product of human activity, a legal or economic system, such as Roman Law, or Hellenic mathematics, or the prehistoric flint industries which are the concern of the archæologist.

That the unity or individuality of such general terms is conceptual, not existential, is evidenced by the fact that the same mass of individuals may be variously grouped, according to the point of view we adopt, in terms of classes, or nations, or churches, as well as in terms of greater or less extension in space and time. All such general terms, to be historically valid, must correspond with some past actuality of common will or experience or belief, and where the term involves extension in time, there must be some form of causal continuity. If, as I shall argue below, the causal relation of events should be regarded as an expanding cone rather than a linear chain of succession, it follows that terms denoting the extension of a culture or civilization are more logically satisfactory than those denoting merely local groups or successions. But if we to that extent admit the validity of Arnold Toynbee's thesis that civilizations rather than nations are the proper study of the historian, let us at the same time recognize that the multitudinous facets of human life and endeavour may be grouped by the historian into a number of different logical patterns, each equally legitimate in so far as it accords with the scope and postulates of his study.

It is an inevitable consequence of the anthropomorphizing tendency of all thought that we should regard these general terms after the manner of persons, and speak of the birth and youth and old age of peoples and cultures. So long as we recognize that we are speaking in metaphors, no harm is done. If, on the contrary, such terms are treated as though they were the names of supra-personal 'entities' or 'forces', as though, for instance, 'Germany' existed in some way apart from the sum or amalgam of individually existing Germans either at one time, or at all times to which the word 'Germany' can refer, then history is replaced by mythology. It is true that these general terms can be, and

indeed must be, treated as causes, both externally in relation to each other, and internally as parts of a whole. We recognize, for instance, a causal relation between Germany in the sixteenth and in the nineteenth century, or between nineteenth-century Germany and the French Revolution, or between Christianity and chivalry. But the necessity of these relations is nothing else than the logical necessity of all real or conceptual relations, and is not to be personified as a sort of Fate or Necessity existing over against the will and agency of individuals. If we say that Germany, or England, or Russia in the nineteenth century was the necessary consequence of what these several countries were in the sixteenth, or any other century, we imply no more than a logically necessary relation between events and political and social and religious conditions in the earlier and later periods: we do not, or should not, imply that the later generation 'could not help themselves' because of what earlier generations had done before them. That implication leads us to an infinite regression that would make Adam, or his Creator, responsible for everything that has happened in the world from the beginning. Every generation is at once the creature of the past and the creator of the future, individually and generally, in nations as in families, a living and active summary and renovation of what I have called the mesh of wills. To say that we are compelled by past events is to draw a logically inadmissible distinction between our social inheritance and what we are 'in ourselves'. The past is an integral part of us; and the extent of our freedom depends, not on our exemption from the necessity of causal relations, but on our actual relations with our fellows, that is, our political and social status and environment.

Again, as individual persons may be grouped and compared and generalized about, so the smaller and larger human groups, nations, churches, civilizations, may be compared and classed, and generalizations made about them. But as the essence of individual living, which lies in its uniqueness, escapes the classification of the systematist, so the essence of the larger historical group lies not in its resemblance to other groups, but in its difference from them. Peoples and cultures may be related to each other conceptually like species of a genus; actually they are related like cousins or siblings, who inherit from a common ancestor, but go their own ways, each embodying his inheritance into some new, unique character and destiny. It is indeed far less possible to foretell the future by study of the past on the

national or international scale than in the case of individuals, because, though the present is always congruous with the past, the continual emergence of new personalities continually opens up new horizons. The fundamental error of all those who claim to discover economic or geo-political or any other kind of 'laws' governing the course of historical events is in treating general historical terms as universals, that is, in using such terms as 'slavery' or 'capitalism' not in reference to a context in time, but absolutely as covering all future possibilities as well as past facts. It is — error based on an all too prevalent confusion of logical categories.

One further point: that the 'general will' as originator of events is not normally opposed to the particular wills of individuals but is rather a summation of them. If we speak of the 'action of the Government' we may neglect, but do not intend to deny, that such joint action may have been preceded by an internal clash of wills, or have been originated by some individual whose dominating personality asserted itself over his more or less reluctant fellows. Conversely the action of the individual 'great man' may be continually affected by the personalities of those intimately connected with him. Every fact is a summation of what in its actuality was something almost infinitely more complex. As in physics the unobservable is unreal, so there is a point beyond which analysis of motive and character cannot effectively operate. Our historical categories are derived from the practical requirements of every-day experience; and the historian's ideas of agency and responsibility are sufficiently defined for him by the practice of the law courts.

The context of history, in fine, is composed essentially of human actions related to each other in terms of time and place and agency. In our historical thought we can move as it were in two opposite directions from this central strand of connection, either trying to penetrate nearer to the personal and transcendental core of past actuality, or arranging particulars in a scheme of general and logical relations. Thus there is a necessary contrast between the deep and the wide view of historical events. For we can only penetrate through to the personal core of events on a comparatively narrow front. As we extend our view over the wider scene, its personal features fade into a more general pattern of peoples and movements and economic changes: it is the logical pattern imposed by our own thought and knowledge, the 'vista' that stands between us and the mostly irrecoverable

detail of past actuality. The closer we draw to the texture of particular events, the more conscious we grow of the 'element of chance' in them; the further we stand back and extend our gaze, the more ready we are to recognize the 'logic of events', the natural connection of each succeeding stage or phase of them. We do well to recognize that the 'chance' and the 'logic' are but the alternate forms of our knowing relation, and that in its making history is neither a chapter of accidents nor the unrolling of a Book of Fate, but the continual confluence of innumerable wills and purposes, of knowledge and ignorance, good and evil passions, hopes, beliefs, fears, the boundless potentialities of human mind and conduct.

So far I have considered some of the fundamental characteristics of history without attempting to define the term, or relate the historical to the prehistorical; but the form of the definition, and of the relation, has been implicit in the argument. I have used the term 'history' in relation to the human past. It can of course be used in a much broader sense, as when we speak of 'Natural History'; and if we think of history simply as the vista or record of the past, we can pass with no obvious break from the human context to that of evolutionary biology and geology; which indeed we do, as our thought travels back in time. But logically, and measured in terms of our experience as a whole, there is this fundamental difference between the human and non-human past, that in the one case we are in a mutual relation with our fellow men, in the other there is a one-way knowing relation between the experiencing mind and the world of its experience. Our relation to the dead is not reciprocal in the same way as our relation to the living is; but though we cannot speak to them, they still speak to us and influence our lives, having left their impress on the world that we inherit. Our relation to the whole human past is essentially of the same kind as our relation to our own parents, who with others of the elder generation have created a cultural world of behaviour and techniques and values. It may perhaps be said that we inherit equally our biological equipment; but between the physical and the cultural inheritance there is the same fundamental difference as there is between an historical cause and a scientific law. In the one case we are concerned with unique personal agency and in the other with observed uniformities of succession. It is because the natural world is a reflection of the human, and because human-subjective categories are extended

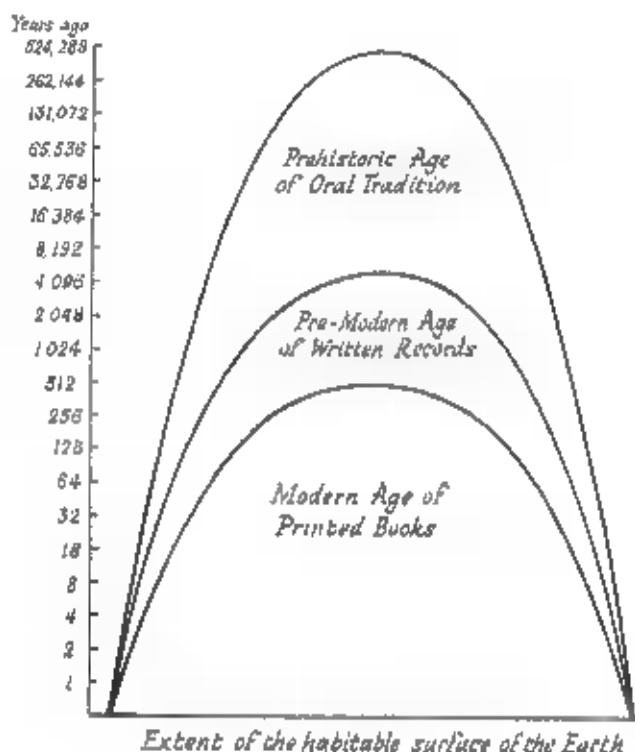
far down into the non-human world that the transition from one to the other passes unnoticed. Objectively in time and space they are continuous; but logically there is a descent to a lower category of knowledge and causality and being. History is not a kind of bastard science. On the contrary Nature itself, though its bounds in time and space be more extensive, is yet a department of humanity, and so of history. As Anatole France has said, there is nothing marvellous in the vast abysses of inter-stellar space: the marvel is that man has measured them.

But, secondly, if the word 'prehistorical' is to be given its normal meaning, history proper must be limited to the human past as recorded in written documents. This limitation is in some respects inconvenient, and we do rather badly need a word to include the vista of humanity as a whole. But the word 'prehistorical' is too firmly established for us to dispense with it; and the distinction between history (in the stricter sense) and the prehistorical is a real and important one, since it marks a main step of descent in our knowledge of the past, and of ourselves. As we proceed from personal agency to human groups and cultures and to causal succession in general terms, so we descend the scale of being and knowledge; and this descent corresponds with the diminishing perspective of the historical vista: that is to say, where our knowledge is fullest, all types of narrative and explanation may be used; but as our knowledge decreases, so the higher categories become less applicable, and we finally pass from the context of history to that of the sciences, from Man the measure of all things to the Nature which he measures.

History is what we know of our past, and the relation of the historical to the prehistorical is most easily defined by relating it to the stages of our knowledge within the historical context proper. There is, I suggest, only one event which can compare in historical importance with the invention of writing, which provided the starting-point of history, and that is the invention of printing with movable metal types by Lourens Coster at Haarlem between the years 1440 and 1446. This event, rather than the discovery of America in 1492 or the capture of Constantinople by the Turks in 1453—dates which have often been selected as marking the transition from mediaeval to modern times—ushered in the age of Modern History, which is as distinct from the pre-modern age as that in turn is from the prehistoric. For the multiplication of books and spread of reading led directly to the Reformation and subsequent Age of Enlightenment, and provided the indispensable

basis for all later developments of scientific and other knowledge and discovery and invention; so that if the question be asked why the great achievements of individual Hellenic scientists never fructified, one adequate form of answer is that it was because they were unable to diffuse their knowledge by means of the printing-press. By this invention the trickle of knowledge and intellectual life that the burning of a single library might fatally dwindle and interrupt was turned into a flooding irreversible stream; and the historical record took on a fullness and detail that sets the modern world before us in all its living intricacy of group and individual striving and conflict and endeavour. By virtue of the printed word we are brought close to our more immediate ancestors, both because we are able to know them so much more fully, and because we share with them a very similar world of experience.

The traditional threefold division of history into ancient, mediaeval and modern has been knocked out of focus, as it were, by the great extension of our historical knowledge beyond the Hebrew and Hellenic sources; and it was never fully applicable to extra-European or world history. In place of it I suggest the following three principal divisions of the historical vista: the Modern Age of printed books, the Pre-Modern Age of written records, and the Prehistoric Age of oral tradition. This classification is expressed graphically in the accompanying chart, which, though it is only intended to have formal significance, may serve to clarify the argument. It will be noted that in it the time scale is represented as diminishing backwards by an arithmetical progression. This is partly a matter of convenience, but is also intended to express the proportionate 'bulk' of the successive ages; and in conformity with this diminishing scale the successive ages are given the shape of parabolas, whereas on a linear scale they would be shown as curving outwards from a point of origin. Two more fundamental points to be noticed are, first, that these Ages are at once stages of our knowledge and stages of historical development; and second, that they are not simple divisions of time but rather two-dimensional divisions of time and geographical extent, into which different human groups enter at different times. Thus while the Modern Age originated in a corner of north-west Europe in the middle of the fifteenth century, Japan only entered it in the middle of the nineteenth century; and while the Age of Written Records originated in the Middle East about 5,000 years ago, England hardly came to be included in it until the seventh or eighth century A.D. The idea of cultural



diffusion has indeed become a commonplace of recent prehistorical discussion, and is implicit in a great deal of earlier historical writing. The *Cambridge Modern History*, for example, which starts ■ ■ history of Europe, closes ■ ■ review of events in every continent. What I wish to emphasize is that the idea of diffusion, or an expanding cone of events, is necessarily bound up with that of historical causation, while linear succession in time is not.

In placing the origin of the Modern Age at Haarlem in the middle of the fifteenth century I do not of course mean to imply that the invention of printing was the sole cause of everything that has happened, within the modern area, since, but only that it was ■ ■ event which, gradually transfusing the existing complex web of past and contemporary mind and will, and their effects on cultural tradition, gave to modern events their specifically modern character. Similarly it was only to the extent that writing transformed the habits and minds of men from their previous state that the historical age differed in its actual character as lived from the prehistoric and savage past of humanity, whose habits

and beliefs and modes of thought and feeling otherwise persisted through later generations, and still persist. This I take to be the character of all historical events, that they introduce a particular new factor into an existing immeasurably complex actuality of other factors, some recent, some going back through the ages; and each event or act spreads out in subsequent effects through the minds of men, its historical importance being relative to the force and extent and persistence of its transforming agency. The boundaries of these three Ages, therefore, do not interrupt the actual continuity of all human history, and each of them is to be thought of as made up of any number of minor areas of expanding personal and social activity and tradition, the rate of expansion varying individually and from age to age; and these separate agencies continually mingling and clashing form as it were an interlocking mesh of activities and traditions, originating and maturing and changing and perhaps dying out, as the individual persons do who embody them, and in whose lives and activities alone they exist. Thus, as I have already suggested, the stuff of history may be brought together in thought in a vast number of different patterns, according to the particular field of survey upon which the historian or prehistorian fixes his attention, and the particular interest he brings to it.

Perhaps it may be held that biography is a 'linear' conception, that the 'life' of a people or culture may also be traced in linear terms, and that the idea of an expanding cone of events applies only when there is an actual increase or geographical expansion of population. Certainly in the case of a quite isolated people, static in numbers and culture, there would be no expansion, and indeed no historical events; but such a case is rare or non-existent, and wherever there are culture-contacts and cultural innovations, there must be some degree of expansion or diffusion, even though there is no increase of population, new ripples as it were successively radiating out from different individual centres, and crossing and cutting into one another to form new eddies. This is what one typically gets in the prehistorical field; and it is the task of the archaeologist to distinguish the resulting complex pattern into its original separate sources. Again, while the biographical method, whether applied to the individual or the human group or society, may neglect events lying outside its chosen context, it does not therefore deny their causal relevance. The life of Napoleon may be written in terms of a psychological study, or of the subsequent history of Europe; it is hardly disputable that the

latter method is the more fully historical. Similarly with the 'lives' of nations.

Each age passes almost imperceptibly into the succeeding one, because the transforming agency produces its effects only gradually. But if we take the whole stretch of some five thousand years between the invention of writing and the invention of printing, the Pre-Modern Age is seen to lie midway between the Modern and the Prehistoric Ages not only in time but in respect of the degree and kind of our knowledge; and this is expressed in the fact that while the Modern Age is the concern of the historian, and the Prehistoric Age of the archaeologist, the Pre-Modern Age is the concern of both. It is indeed to the archaeologist that we owe the great extension backwards of the Historic Age, through the discovery and decipherment of the inscriptions and inscribed tablets of the great pre-Hellenic civilizations of the Near East. In this field the archaeologist is himself a philologist and historian, whose work of excavation and study of objects is closely bound up with the less exacting task of deciphering and interpreting inscriptions; so that we may distinguish the archaeologist-historian from the archaeologist *pur sang*, who is concerned solely with the non-documentary remains of the past.

The historical archaeologists have not only extended history backwards in time, but by their more strictly archaeological work of excavating and recording temples, houses, tools, objects of art and other material remains, have been able to portray the early historical ages with a depth and firmness of outline previously undreamed of; ■ that we can as it were ■ these long-vanished generations in their homes and villages, working in the fields, or in their temples and crowded cities, almost as clearly as we can see their present-day successors, carrying on in many ways the same unaltered rhythm of life, using still some of the same primitive techniques. Moreover, the study of tools and other artifacts, particularly pottery, over a wide area has established the contact and succession of early cultures in a manner quite outside the scope of the philologist, and which provides a new, firm scaffolding for the construction of human history on a world scale. But these triumphs are a measure, not of the inadequacy of the historical method as such, but of the inadequacy of the surviving documentary record. We have come to realize what ■ thin trickle of information was conveyed to us by the literary sources, even in the heyday of the Hellenic civilization, and for as long as war and politics and the affairs of courts and kings were the

chronicler's main or exclusive concern. Indeed, though history was born with the Hellenes, and the genius of the great Hellenic historians forestalled to some extent our modern aims and methods, history as we understand it to-day was a creation of the nineteenth century; so that the great bulk of historical writing appears, in comparison with the results produced by modern archaeology, jejune and unreliable. But what the archaeologist-historian has been able to do for the early civilizations the philologist historian has done with much greater fullness of detail for modern times by the study of printed and manuscript sources. And that the knowledge attained thereby is of a higher order than that obtained by the archaeologist-historian of earlier ages is evident, if we consider the sort of knowledge some hypothetical New Zealander would have of Europe in the nineteenth and twentieth centuries, if he were limited to what he could find in the rubble of some dozen or so abandoned and utterly destroyed cities of England and France and Germany, in whose ruins were included perhaps the tattered remains of some thousand or so printed volumes of all kinds, and some boxes of random manuscripts; and if we compare the results he could obtain from such materials with the overwhelmingly full and detailed and exact knowledge we now have of our more immediate past, and not merely of wars and treaties and the doings of the great and mighty, but of the lives and thoughts of all kinds and classes, of individuals and of smaller and larger groups—a vision as infinitely various and comprehensive as life itself. Thus the proper contrast is not between archaeology and history, but between the pre-modern type of history and modern historiography, of which archaeology is a part.

Again, it is true that the historian is inclined to interpret events in terms of his own personality; and this element of partiality appears to contrast with the greater objectivity of the archaeologist. But we must beware of assuming that material objects are in some way more 'objective' than inscriptions or manuscripts, or of claiming too much for the objective method. The only absolute fact is, as I have asserted above, the bare, particular fact. For example, opinion is always likely to differ about the character of Julius Caesar and the significance of his career; but there are many facts of his life which may be regarded as established absolutely. Now in the field of archaeology the natural objects unearthed by the field worker can hardly be described except in terms which involve a general interpretation of all the relevant data; and as new discoveries lead to new

interpretations, each particular site or tool may change its definition. The 'bare, particular fact' in this case is the fact of excavation and discovery, which is a part of contemporary history, not the inference to prehistoric times which the archaeologist draws from it. Doubtless each new interpretation expresses an extension of our knowledge; and in certain limited fields of investigation a firm scaffolding of knowledge has been built up in recent years, which is not likely to be broken down by future discoveries. But we must recognize also that this certainty or objectivity is greatest in the contexts which lie within or close to the historical ages, and the further we remove from them, the more insecure our framework of interpretation becomes, and the more personal and local and national prejudices tend to enter into it. In fine the great achievements of the archaeologist must not dazzle us into supposing that he penetrates deeper than the simple historian into the core of past actuality. Here as elsewhere scientific knowledge is more abstract than historical knowledge.

The Historical Age is roughly continuous with the development of civilization (using the term in its simple and literal sense of 'living in cities'). But since history, according to the accepted definition of the term, begins with the earliest surviving written records, and there is a considerable lapse of time between the first steps of advance towards civilization and its culmination in the invention of writing, it follows that there is a marginal area or age between the beginnings of civilization and the beginnings of history, and that the Prehistorical Age falls into two main contexts, one the vast stretch of time during which man, the savage food-gatherer and hunter, evolved from sub-human forms, and slowly accumulated a cultural tradition, the other the immediate prehistoric context, during which certain human communities advanced from savagery to civilization, by domesticating plants and animals, by the invention of weaving, pottery, metallurgy, agriculture by irrigation, of the plough, the wheel and the sailing boat, and finally of building and reckoning and writing. This crucial stage of man's development, of which we have lately learned much, and still know so little, is pre-eminently the field of the archaeologist. Here he reigns alone, whereas the later context he shares with the historian, and the earlier with the geologist, biologist and anthropologist. To this marginal area, which extends behind the historical age of every country, the term 'Dawn of History' is most appropriately applied. But we need also to distinguish within it the stages of original growth from the later

fringe of barbaric culture which the civilized states extended over their borders into the uncivilized world, where some of the civilized arts and techniques were acquired and copied, but the imitation did not extend to the building of cities or the art of writing. These barbarians beyond the border, whether they followed the nomadic or agricultural economy, or, as often, an intermediate form between the two, were alternately the clients and predatory invaders of the fully settled lands: 'sackers of cities' was their title of honour. Much of Europe lay within the barbaric fringe from the beginning of the neolithic age until the city building of the Romans, and its north-eastern quarter almost until the Middle Ages. It seems to me unfortunate that the term 'barbarism' has been applied to the earlier as well as the later midway position between savagery and civilization, one being related to civilization as cause to effect and the other as effect to cause. It is true that the earlier forms of agriculture and other inventions which led up to civilization were at all times being disseminated over the world from their Near Eastern place of origin, and that in the outer provinces of humanity the barbaric peoples were not servile imitators, but created their own distinctive cultures. Nevertheless the distinction between a form of culture which is prior to civilization and one which derives from it is logically fundamental; and according to its normal historical sense 'barbarism' is the opposing counterpart of civilization rather than its embryonic form.

The prehistorical archaeologist deals with the material results of human agency anonymously and comparatively. He is concerned, like the scientist, with kinds and types rather than with proper names and places. Yet the subjective categories of agency and individual personality are the necessary postulates of his methods and conclusions: that is, he must suppose that the relation of industrial techniques and other elements of culture in time and space represent and embody the inter-subjective relations of human groups and individuals. It so happened that most of the early discoveries of prehistoric archaeology were made in France, and as a result of this localization the various stages of palaeolithic industry were conceived of as arising out of one another by a mere temporal succession. The more extensive investigations of recent years have revealed a far more complex pattern of industries spreading out from various centres like ripples in a pool over the whole great land-mass of the Old World. Here we have illustrated the difference between the 'evolutionist' and 'diffusionist'

forms of explanation, and their relation to the levels of our knowledge. The prime postulate of the diffusionist or historical form of explanation is that each new element of culture in prehistoric times must have had a particular and personal origin in the same way that historical inventions or religions had, and that people do not start polishing stone tools, or domesticating animals, or practising exogamy, merely through the operation of some universal 'law' or tendency of human nature. This postulate of the individual origin of all cultural tradition does not rule out the possibility that two or more individuals at widely separated times and places may have made the same invention or discovery; and there is all the difference between asserting the general historical principle, and asserting that every cultural tradition can be traced to its source. There is in fact a wide area within which evidence of cultural contacts and diffusion is either dubious or non-existent. Again, as culture-contacts may be of all degrees of efficiency, from the settlement of a colony to the chance transmission of a single object, so the relation between the original model and the derived copy may be of every degree of propinquity or remoteness, and in its passage through different minds and societies a technique or tradition may be transformed out of all recognition. For instance, it is generally agreed that the three earliest scripts, the Egyptian, Sumerian and Susian or Elamite, show no evidence of derivation from a single source; but that does not in itself rule out the possibility that the simple idea of pictographic writing may not have been somehow communicated from the earliest centre of nascent civilization to the other two.¹ However that may be, we have to recognize that what is called the 'Diffusionist Theory' in archaeology and anthropology is in essence no more than the assertion that these subjects belong to history, and not among the sciences. It is unfortunate that some protagonists of the theory have prejudiced its standing by their too flimsy hypothetical constructions, and unwarranted claims for Egypt as the original source of all culture and civilization.

As we go back in time, we tread a descending scale of knowledge and causality; and this descent is illustrated in the relative time-space boundaries of the three Ages. For while the Modern Age can be given a personal point of origin at a particular time and place, the Pre-Modern Age has a much less definite point of origin, namely the Near East about 5,000 years ago, and the Pre-historic Age has no ascertainable origin in space-time, but only a vague temporal boundary of some half million years ago. In-

deed, though we may represent the Prehistoric Age in the same graphic form as its successors, we have no grounds for supposing that humanity itself had a single point of origin. It is a matter for irony that the 'evolutionists' who regarded the inventions of prehistoric man 'scientifically' as stages of natural growth, should have at the same time generally assumed that all existing races are descended from a single sub-human stem, or even a single pair of individuals; whereas uniqueness is the typical quality of the historical, and uniformity of the scientific context, so that on *a priori* grounds we should rather assume that similar physical pre-conditions would lead to the parallel evolution of similar organic forms; and the recent discoveries of fossil remains tend to support this hypothesis. In any case the limitations of our knowledge compel us to fall back more and more, as we approach the limits of humanity, on generalizations and abstract formulas. Moreover the complex actuality of history is split up into a number of divergent contexts, since our knowledge of primeval man is indirect and drawn from several different disciplines, the anatomical study of his fossil remains, the archaeological study of his tools and other artifacts, the comparative study of uncivilized peoples, and the data of individual and social psychology. Again, though from our historical point of view we may wish to reduce anthropology to an historical science, we have to recognize that it has a status of its own, and that for some of its purposes the categories of history may be irrelevant, and the hypothesis of functionalism of more value than that of culture-contacts and individual agency. Similarly geology and anatomy are, from the historical point of view, subsidiary to archaeology; but they are also sciences 'in their own right' with their own great practical uses and importance.

Thus in our search for human origins and an historical First Cause we are led back from particular events and agencies through progressively wider generalizations and more abstract formulations to a final *cul-de-sac* of ignorance, which seems to contradict the causal assumptions with which we started out. But this contrast between the causal cone of events leading back to a particular, personal origin and the uncertainty and huge time-space extent of the prehistoric in relation to the historic age, is an instance of the human relativity of all knowledge and reality, which leads us back from the farthest bounds of time and space to our own individual thought and being, which we transcend only through our relations with other selves or persons. The human mind

started by regarding natural objects as subjective centres of activity; and this conception of extra-human, or super-human, sources of purpose and activity is deeply embedded in all thought and language. Latterly, as the world of our sensible experience came to be defined and plotted by scientific methods, natural objects and processes were deprived of all other attributes of selfhood and personality, but were still regarded as existing 'objectively' in their own right, while persons were themselves denied the attributes of personality on the ground that they were part of the natural world—of other people's experience. It is time we recognized that the natural world is the circumference to a circle of which we are the centre, and that History and Reality, Ourselves and Nature are complementary terms, neither one resolvable into the other, and each including the other.

The paradox of causal relations may be illustrated perhaps more clearly if we consider the particular act in its backward as well as forward relevance. For, as it spreads out forwards in a widening stream of consequences, ■ also it is a conjunction of previous acts and events, which spread out in widening circles as we go back in time; and as we trace this concurrence backwards, we of necessity pass from the personal and particular to the general. Thus, to return to a previous point of the discussion, the outbreak of war in 1914, or 1939, may be attributed in the first place to a small group of individuals, who by their actions and intentions shared to a greater or less extent responsibility for it. But if we take a wider view we may trace its origin back through a widening circle of actions and events and of individual and national will and character, until finally it appears as the necessary result of all history and the nature of humanity. Now, just ■ an explanation in terms of 'The Government' or 'Germany' does not rule out the actions of individual persons but merely summarizes them in gross, so this wider explanation does not rule out that in terms of individual will and character, but is rather an alternative form on ■ different level of thought; and the farther we trace back the concurrence of events, the more summary and abstract becomes our view of them. So, while it may be argued that for a full understanding of the event we need to survey the whole previous course of German, and European, and World history, such a survey will lead us not to any unitary First Cause, but only to an abstract scheme of necessary relations. Nor does the explanation in general historical or scientific terms nullify the ascription of personal agency and responsibility. Rather agency and per-

sonality provide the core of actuality from which all thought and reality derive their meaning.

What is true of this particular event is true of all others, and of history as a whole. If we think of this whole as a causal cone of events deriving from a particular point of origin in place and time, we have also to think of it as a vista receding from us, spreading out in wider perspective through the ages to the horizon of time and thought, and forming in all its infinite diversity of individual will and action a single pattern of humanity. We may take the pattern of the whole for granted, and concentrate our attention on the concrete particulars within a limited field of vision. But in our more synoptic and philosophical mood we feel the need to consider the particular in terms of the whole, to relate ourselves to our human past, historical and prehistorical. In the preceding pages I have emphasized the subordination of the latter to the former, because it seemed necessary to insist — the logical priority of the personal and actual over the impersonal and real, of the historical categories over those of the sciences. But if we accept this priority, we must none the less recognize that the prehistorical constitutes an integral part of our backward vista, and that in virtue of its vast extent and originative position in time it contributes an essential element to the pattern of the whole: in other words, we cannot form a proper concept of history without taking into account the range of prehistorical studies; and when we attempt a synthesis at the highest and most abstract level, the prehistoric age, in spite of its comparative poverty of detail, bulks perhaps in its ultimate significance as more important than all the infinite richness and variety of historical facts. Our search for a First Cause falls into the void. But here in this twilight borderland of psychology and biology and human origins we view in the widest perspective the groundwork of our human nature, the triumphs and follies of the past, and struggle of good and evil eternally renewed.

History differs from the sciences, we have seen, in being concerned with subjects rather than objects, and in that we are at once observers and heritors of the past, and are continually summing up and embodying all past history and creating the future in our political and social and religious and intellectual activities, including our activity as historians. Here we may quote Croce's apophthegm that all history is contemporary history, which I take to be an assertion of this double relativity of the past to the present,

of the facts to our thought of them, and of our present activity to the past activity of others. Hence the function and the responsibility of the historian = a 'political animal'.

Historical research, like scientific research, is inspired primarily, or should be inspired, by pure intellectual curiosity. No one, and least of all one not himself trained and practised in the discipline of research, should venture to depreciate in any way its value, or the value of the spirit informing it. The enquiry into facts for their own sake, the divine spirit of curiosity, the unprejudiced and unselfish and unpractical working of the critical intelligence—here is one of the fine flowers of civilized humanity, which if it withers, not only science and scholarship wither with it, but all forms of social and political life turn sour. In these days we have reason to fear the subordination of fact to policy, and the choking of intellectual life by the pressure of economic needs, technical specializations and political and international threats and dangers: the intellectual life becomes more precious as it becomes more threatened and circumscribed. But all the more because the old privileged leisure and security have gone it is necessary that scholarship should make its influence felt abroad, and as widely as possible. There can be no doubt that the present-day extreme specialization of knowledge, made inevitable by the sheer bulk of facts to be assimilated in any one field, tends to open too wide a gap between the multifarious branches and studies and disciplines which go to make up the historical whole, as also between the expert and the public to which all his work must finally be addressed. It was the personal consciousness of this gap which supplied the original motive for the present work, though whether or to what extent the author's pontifical ambitions have been achieved it is for others to decide.

History no longer limits its attention mainly to the wars and marriages and governments of kings and nobles, but interests itself in the common life of peoples, their social and economic welfare, their familiar thoughts and social relations, their religious rites and beliefs. The change of emphasis reflects the social and political changes of the last hundred years, = the economic determinism of the Marxian historian; and the 'functional' anthropology of Malinowski and his school, reflect in their several ways particular developments of modern social and political thought. The historian should not expect or claim to stand aloof from his own age and generation. His ideal should be that the politics of his age and country should display an historical sense,

rather than the history books the national and political prejudices of their authors.

History, unlike the sciences, has no practical applications, except to the extent that the ascertainment of facts of any kind may check the progress of prejudice and falsehood. The claim to foretell the future by a study of the past is a wholly illusory one; and even the more modest supposition that history contains lessons of practical value to the politician is hardly to be entertained seriously in these days, when the ideological gulfs separating states and parties are perhaps wider and more unbridgeable than ever before. Like the arts history is an end in itself, and a source in itself of aesthetic enjoyment. Yet again, unlike the arts, its aesthetic is subordinate to its factual interest. Facts are historically valuable as facts, though they may have neither beauty nor utility. Yet history, if it is to be more than antiquarianism, must have some meaning which goes beyond the facts, and provides them with a wider significance. The theological principle that it may be used to trace the working of the Divine Providence, and the Hegelian, Marxian and other philosophical conceptions of it as the unrolling of some supposed metaphysical idea or 'law', are all equally unacceptable to the serious historian of to-day, who objects to having his facts ordered by some rule imposed from without, and to an over-simplification which has inevitably distorting effect. During the nineteenth century the guiding principle of probably most historians was the Idea of Progress, of the gradual improvement and civilization of man through the ages. That principle still operates, and perhaps more especially in the prehistoric field, where the gradual increase of human mind and advance of technical skills is the main theme of discussion. But over the whole scene of human activity and endeavour, which includes our hopes and fears for the future as well as our sympathies and indignations with the past, the optimistic view is less assured to-day than formerly, the sense of pain and tragic destiny more abiding. We question the past because we fear the future.

According to Croce history is to be identified with philosophy; and that surely means, if I understand him aright, not that history is to be 'interpreted' in terms of some metaphysical system, but rather that in history, and there alone, we have a true synoptic and philosophical view and account and expression of ourselves and our humanity. It is the drama of life which we both contemplate and belong to, the field of study where we both expand our

personalities and learn to understand ourselves, the basis for our moral judgments, and springboard for our political action—in fine, it is the School of Humanism. Those who reject the ideals of Humanism in favour of some harsher and more irrational creed and quest for power may well turn their backs on history, or distort its pattern to their own ends; because the facts are inimical to them. But those who cherish ideals of political and economic and intellectual freedom, and for whom Truth and Goodness and Beauty are absolute ends, will find in history, rather than in any of the special sciences, the grounds and substance of their humanity.

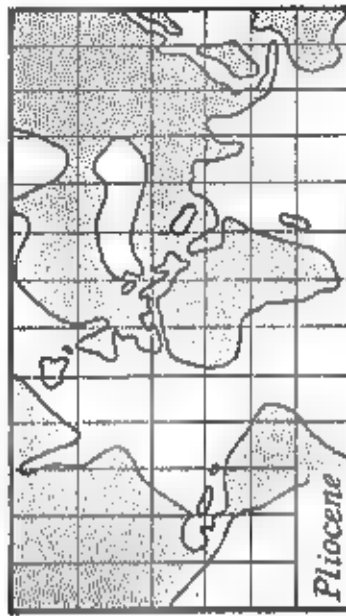
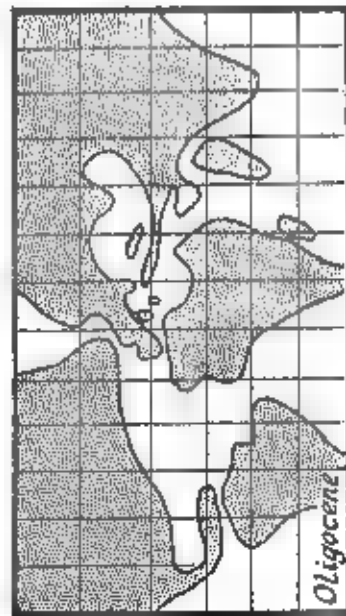
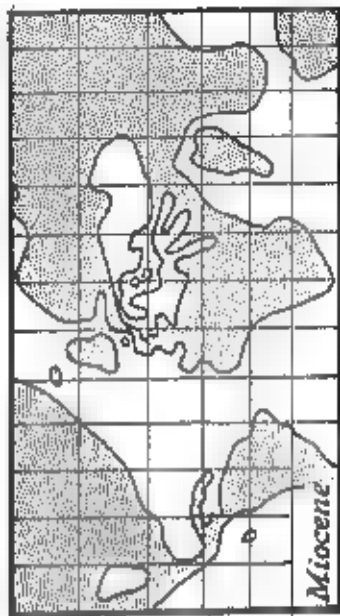
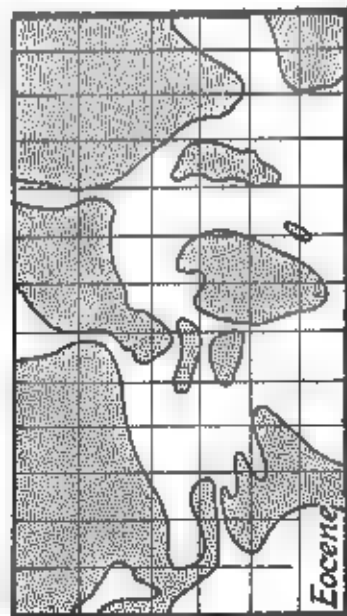
NOTES

¹ See E. A. Speiser, *The Beginnings of Civilization in Mesopotamia in Antiquity*, Vol. XV (1941), p. 167, note 12.

CHAPTER I

THE FRAMEWORK OF TERRESTRIAL CHANGE

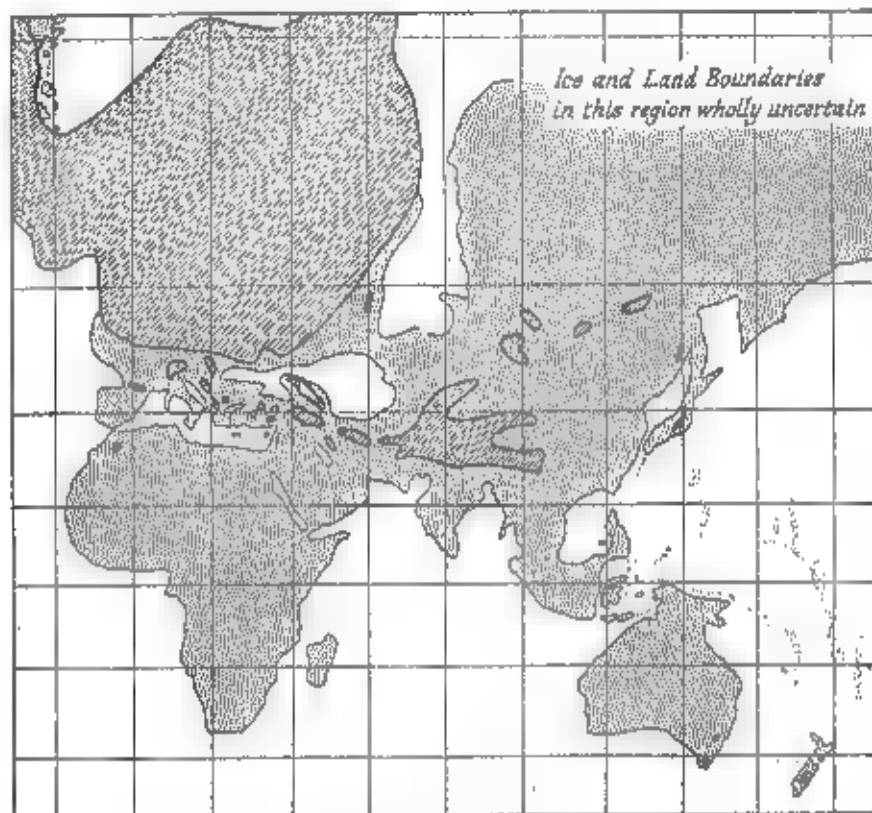
THE OLD WORLD north of the Equator, which is the homeland of mankind, is divisible into five main climatic and vegetative regions. Firstly there is the great belt of desert and semi-desert country, lying partly south and partly north of the central mountain backbone, and which stretches from the Atlantic coast of Africa through the Sahara, Arabia, Syria, Mesopotamia, Persia, Afghanistan and north-west India, and from the shores of the Caspian through Turkestan and Central Asia and Mongolia to Manchuria and almost to the Pacific. Secondly there is the region of tropical Africa, India and Further India. Thirdly there is the north-western quarter of the Mediterranean basin and European peninsula with its temperate and mainly maritime climate, and which extends an eastward arm into the Siberian plain. Fourthly there is the eastern quarter of China, Manchuria and Japan with its generally ■■■■ continental climate and greater extremes of heat and cold. And lastly there is the northern region of sub-arctic forest and barren tundra, which in Siberia stretches down ■ as to leave a relatively narrow strip of cultivable land between it and the central Asiatic steppes. Thus, neglecting this last region of the barren North, we may distinguish four main regions of human habitation, Central, Tropical, European and Oriental; and these regions are seen to correspond roughly with the four main colour divisions of humanity, the Browns of the central desert area, the Blacks of the tropical South, the Whites of Europe, and the Yellows of Central and Eastern Asia. Again, with some important modifications—we may notice, for instance, how the central desert area is interrupted by the river systems of the Indus, the Tigris-Euphrates and the Nile, and how the height of the East African plateau assimilates it in some respects to the temperate regions of Europe, to which it is linked by the narrow, intensely fertile corridor of the Nile valley—this climatic scheme may be related to four fundamental types of human economy, the nomadism of the steppe and desert, the hunting and food-gathering



Map I. Land masses during the pre-Pleistocene stages of the Kainozoic Era

of the tropical and northern forests and arctic tundra, the dry agriculture of Europe, North China and parts of India, and the irrigation culture of south-eastern Asia, and of Egypt, Mesopotamia and the Sudan.

Thus in the most general way are the climatic zones of the Old World related to the economies and physical characteristics of



Map II. Probable Glaciers and Shore-lines of the Old World during period of maximum glaciation

the peoples inhabiting them; and this relation, we may be sure, existed throughout the vast extent of prehistoric time, when man was developing by slow stages the culture which raised him above the animal world in which he lived, and which led on, after aeons of savage existence, to the domestication of plants and animals and birth of civilization; and while he was also, like the animals around him, evolving physically his characteristic modern shape

and faculties. This great stretch of time is divisible into several stratigraphical and palaeontological chapters. Of the three main evolutionary volumes the third or Kainozoic; which is the Age of Mammals, alone concerns us, and that is usually divided into the following chapters or stratigraphical systems: Eocene, Oligocene, Miocene, Pliocene, Pleistocene and Recent; and the pleistocene system of surface stratification and accumulation is also contemporaneous with the climatic era of the Glacial Age. Looking back beyond the threshold of history we may distinguish three main epochs of prehistoric time. The advance from savagery to civilization belongs to the period from the close of the Glacial to the opening of the Historical Age; the evolution of modern mankind from its primeval forms and the growth of savage cultural traditions to the Glacial Age or pleistocene system; and the evolution of the human genus from an early mammalian stock to the pre-pleistocene stages of the Kainozoic or Age of Mammals, though how far back we have to go is a matter of dispute. The stretches of geological time are so vast as to be hardly measurable in terms of years; but, reckoning the extent of historic time at about 5,000 years, we may estimate the post-glacial stages of prehistoric humanity as lasting about twice as long, or 10,000 years, the Glacial Age as at least one hundred times as long, or 500,000 years, and the pre-pleistocene stages of human evolution as a hundred hundred times as long again, or 50,000,000 years. The vast climatic and geographical changes which occurred during these barely imaginable stretches of geological time conditioned both the evolution of mankind, the distribution and physical characteristics of existing human races, the growth of cultural traditions, and the local and temporal origins of civilization.

In their classical work on the glaciation of the Alps¹, Penck and Brückner distinguished four main extremes of the Glacial Age, which they name Günz, Mindel, Riss and Würm respectively, after four little streams flowing down their northern slopes. Three or more glacial extremes have since been distinguished in Russia, northern Germany and England, and have been correlated with the Alpine series. Considerable uncertainty remains, however, both as to the number and contemporaneity of the successive stages; and their relation to climatic changes in other parts of the world is still more uncertain. But it is clear at least that throughout the Pleistocene there were recurrent periods of glaciation in Europe, Asia, and North America; and these

changes in temperature were related to variations of rainfall, whether we are to suppose a world-wide alternation of dry and pluvial periods, or, what is more likely, the shifting of the rain-belt from a more northerly to a more southerly course, and back again; or these two types of change may have been combined. Perhaps the whole Age might be represented as a series of temperature undulations increasing to a maximum and then diminishing again.* Of the four Alpine glaciations it is generally held that the second and the third were the most severe, and that they were separated by an intervening warm phase that far exceeded all others in extent. We know also that the onset of the first glaciation was preceded by a long period during which the temperature was gradually falling, and that the final glaciation was itself divided into several minor oscillations of diminishing intensity. The physical origin of the whole series is still a matter of dispute, and need not concern us; but we may note that according to some authorities it is not yet at an end, and that the stretch of time we call recent or post-glacial may be rather one of intermission between the last glaciation and the next to come: in other words we are living, and the whole of history has been lived, in a warm interval of the still persisting Glacial Age.

Whatever may have been the precedent ■■■■ for the expansion of the Scandinavian ice-sheets, it seems likely that the process once started would have brought on by itself the further series of meteorological changes. As the winter accumulation of snow and ice became more resistant each year to the summer power of the sun, so the summers grew shorter and cooler, and the glaciers from the Scandinavian mountains piled up year by year in the northern part of the Baltic, till they overtopped the mountains whence they originated, and spread out north and west over the Atlantic and North Sea and British Isles, eastward over northern Siberia, and south over Holland and Germany and Russia as far as the Harz mountains and the Carpathians and the middle courses of the Dneiper, Don and Volga, and by ■■■■ communication of arctic conditions turned the more southerly mountain backbone into a series of huge alpine ice-fields, from the Pyrenees in the West to the Caucasus and the great central tableland of the Himalayas and Tibet. Probably as a consequence of these climatic changes, or accompanying some later stage of them, the Atlantic rain-belt shifted south; and while Europe lay parched under the dry freezing winds of the gigantic northern ice-field, the present central desert ■■■■ was turned into

a well-watered region eminently favourable to vegetable and animal life. Then, after an uncertain lapse of centuries, the process was reversed, and as the summer evaporation of the glaciers progressively increased over their winter accumulation, the ice retreated northwards, and the barren earth was clothed again with green, first with the lichens and dwarf-vegetation of the tundra, then with the northern pine and larch, or plants and grasses of the steppe, and lastly with beech and birch and oak and richer vegetation of the warm South. In the wake of this advancing vegetable life moved the appropriate fauna of each zone, expanding and multiplying in accordance with the increased potentialities of its environment, filling in and complicating the economic pattern of consumers and consumed; and among the rest moved the primitive human animal.

Our knowledge of the Glacial Age of Asia is still very incomplete, but traces of successive glaciations have been observed in the Himalayas and the ranges north and east of the great central tableland of Tibet, in the mountains of western and central China, and in certain peaks in northern Formosa, central Japan, and north-eastern Korea. Thus it may be assumed that the glacial cycle in Asia paralleled that in Europe, that the north-European ice-sheet extended over northern Siberia, and that a similar shifting of the rain-belt occurred with consequent alternation of fertile and desert conditions.

One consequence of the advance of the northern glaciers was the laying down of loess along the southern edge of the ice-sheets. These deposits, which are distributed in irregular patches through central Europe from north-west France to the Hungarian plain, whence they are continued in a much wider belt through southern and south-eastern Russia, were formed, it seems most likely, during periods of glacial advance, through the action of the wind during the dry season of the year pulverizing and distributing the mud of the glacial outwash, and spreading it year after year over the scanty, struggling vegetation. In the succeeding warm period when the forests spread northward, the fine light soil thus formed gave insecure holding for the roots of trees, so that the loess regions remained for long open tracts of grassland or steppe lying between the northern tundra and the alpine or temperate forest regions to the south. Even in the longest interglacial periods Europe was probably less heavily wooded than it became in post-glacial times. In Turkestan and North China loess deposits of even greater extent and depth are found which must have been laid down

partly at least during the anticyclonic stages, when dry cold winds were blowing off the ice-fields, but partly also perhaps during the interglacial periods when, as still happens to-day, desert sand storms might blow up vast quantities of dust and distribute it over wide areas of less arid country, where it became anchored by vegetation. During some interglacial stages, however, the semi-arid belt seems to have shifted north of its present latitude, with the result that the north China plain was both warmer and moister than it is to-day. These wide tracts of steppe over Eurasia may be regarded as a necessary condition of the development of the savage hunting economy. In the forest primitive man was likely to remain an omnivorous food-gatherer, shut in and dominated by his surroundings; whereas the open steppe with its herds of grazing animals offered him a wider scope of life under the open sky. We find in fact that the decay of the old hunting economy in Europe coincided with the growth of the post-glacial forests.

The northern glaciations were almost certainly duplicated in the southern hemisphere, and it may be assumed that the two series were contemporaneous. There is evidence of three pluvial phases during the Pleistocene in southern Australia, of at least two glaciations of the Mount Kosciusko region in New South Wales, and of still more extensive glaciations in north-west Tasmania, the lower moraines of the Mount Field system lying only about 400 feet above sea level. During these recurrent ice ages south and central Australia would have been well-watered regions with thick forests of the characteristic Australian gums and acacias, and probably more open grasslands in the central river basins. Similarly in South Africa there occurred a series of pluvial phases, when a great deal of the present steppe and desert country was open forest — savanna of the kind now found further north in Rhodesia and East Africa. Here too, on the Equator, we find that the snow line on Mt. Kenya was at one time 4,000 feet lower than it is at present, and there is similar evidence of low moraines on Mt. Kilimanjaro. We may conclude then that the general lowering of temperature during the glacial phases caused the tropical zone, in India and south-west Asia as well as in Africa, to shrink in extent and become more temperate. Conversely during some interglacial stages, when temperatures were generally higher than they are now, the regions of tropical forest and lifeless desert are likely to have been more extensive than they are to-day.

Parallel with these great oscillations of climate, and to a large

extent as a consequence of them, there occurred periodic changes in the shore line all over the world. On the one hand the huge accumulations of ice in northern Europe and elsewhere caused a bending of the earth's crust beneath the superimposed weight, with a compensatory rise beyond the periphery of the glaciated area; and at the same time they reduced the general level of the sea, so that while the northern land-masses were depressed, in the regions nearer the equator the sea receded, and new areas of dry land appeared. With the melting of the ice an opposite set of conditions supervened; but while the general rise of sea level was continuous with the melting of the ice, the readjustment of the earth's crust to the redistribution of weight progressed at a varying rate, being delayed at first, then accelerating, and then gradually falling off again. As a result of this interaction of land and water movements in post-glacial periods a complicated series of land and sea changes was liable to take place in regions of major glaciation: in particular such changes are known to have occurred in the shore line of the Baltic area after the close of the last glaciation. In the Mediterranean area the successive periods of high sea level have been named, after the shores where they are typically marked, Sicilian, Milazzian, Tyrrhenian and Monastirian; and these high sea levels correspond with the intervals between the successive glaciations. But it cannot be said that an exact scheme of correlation between shore levels and glaciations has yet been established.

Besides these changes in the earth's surface which were due to the successive glaciations other major earth movements occurred at two separate stages of the Pleistocene, which were of independent origin, though they are perhaps related, as cause rather than effect, to the whole series of climatic changes. Among these may be included some of the later stages of the faulting of the great Rift Valley in East Africa, which were accompanied by extensive uplifting and reversal of river systems, major volcanic disturbances in northern Africa, continuing uplift of the Himalayas which ~~more~~ than offset the effects of glacial denudation, tectonic movements and volcanic activity in south-eastern Asia leading to the emergence of Java from the sea and formation of its surface deposits, and vertical crust deformation in northern Europe and America. Finally we may note that minor isostatic movements were (and still are) occurring everywhere more or less continuously, the constant erosion of mountain-sides and river-valleys and the deposition of sediment at river-mouths being com-

pensated by the lightening and elevation of the central land-masses, and corresponding subsidence of the shore line. As weathering and flooding were particularly heavy during some glacial stages, when the shore line was lowered and a huge volume of melted ice and snow was being carried down the valleys, while under opposite conditions alluvial deposits accumulated in them, many river-beds display a series of alluvial terraces, which correspond in some degree with the marine terraces of the several shore lines.

The general effect of these secular geographic changes was to unite and extend, at different times, the continental land-mass of the Old World. Thus in the North West the British Isles for long formed part of Europe, which stretched far out into the Atlantic and North Sea. In the South East Asia extended solid arms of land to embrace the Andamans, East Indies and Philippines; while an enlarged Australian continent, separated by an intervening channel sufficiently wide to allow the development of a distinct Australian fauna, but not wide enough to keep out some of the most primitive types of humanity, included Papua and other islands to the north: the foundering of the Bass Strait separating off Tasmania probably occurred at the very beginning of the Pleistocene. At one time also land bridges linked Asia to Europe by way of the Aegean and to North America by way of the Bering Strait, and possibly Africa to Europe by way of the Strait of Gibraltar. Belief in the existence of several land bridges across the Mediterranean during the Glacial Age has indeed been recently disproved; but the marine evidence seems to require the isolation of the Mediterranean from the Atlantic after the Sicilian high shore level at or near its beginning.⁴ Possibly during the greatest extension of the glaciers another bridge from Africa to Asia was established at the Strait of Bab-el-Mandeb, though the botanical evidence makes it unlikely; while during some interglacial periods of marine transgression Africa was entirely cut off by the drowning of the isthmus of Suez. Finally, at the beginning of the Pleistocene a greatly extended Caspian, linked at one time to the Arctic Sea by a gulf stretching southward through Siberia, interrupted the continuity of the north Eurasiatic plain; while the later southerly extension of the ice-sheet over Russia and Siberia, and glaciation of the central Asiatic massif, provided a still more continuous barrier of ice and water, separating the fauna of north-east Asia from that of Europe and the Near East. To such extreme climatic conditions may be due

the lack of any trace of humanity in Russia and Central Asia during the earlier phases of the Glacial Age; though a possible alternative explanation is that such early stations lie buried too deep for finding beneath later accumulations of loess.

During the ages, then, of his savage evolution primitive man seems to have been subject to two main alternating sets of physical conditions. During one phase, while ice debarred him from the North, a general lowering of the sea level, together with a diminution both of the tropical forests and the desert zones to north and south of them, allowed him to migrate more easily than under existing conditions over the remainder of the Old World, and to move out into peninsulas now drowned or cut off by the sea. During the opposite phase, while the North lay open to him, incursions of the sea and widening tracts of desert and tropical forest tended to isolate him into separate regions. The earlier historical ages were punctuated by swarming movements from the steppes and deserts of Arabia and Central Asia: from these remote plains, the backyard of modern industrial civilization, issued the conquering hordes who time and again swept over Europe and Asia, destroyers and heirs of the earlier civilizations, as the Semites also issued out of the Arabian desert in waves of conquest over Asia and Africa. These periodic incursions of the steppe-dwellers into the peripheral regions of greater fertility have been attributed to recurrent changes of climate, a comparatively small decrease of precipitation leading to a catastrophic reduction of animal life.¹ It seems likely that in other remote interglacial times similar climatic conditions produced similar movements of population from the centre to the periphery of the Old World. In any case we may be sure that under the secular changes of climate through untold ages tribes and races of humans and sub-humans were wandering and spreading abroad and becoming adapted to a variety of changing physical conditions. Already at the beginning of the Glacial Age men were living in the farthest corners of Asia and Europe, and during the course of it they penetrated to every inhabitable part of the Old World, and to Australasia and possibly to the Americas — well. Long ages before the building of ocean-going ships mankind, alone of all the mammals, is found to have a world-wide distribution.

In considering the revolutions of the Glacial Age we have to bear in mind the immense time-scale of the whole process, and remember that each main climatic phase was at least ten times as long as the whole of recorded historic time. Though some

changes may have been catastrophic, — when the Atlantic burst through the Gibraltar barrier at the beginning of an early interglacial phase, or in the case of the faulting which produced the great Rift Valleys of East Africa and trough of the Red Sea, the climatic succession was at all times so gradual that no one individual would ever have been aware of it. Thus there was time, when conditions were favourable, for wandering groups to move, from generation to generation, through the length and breadth of continents; time too, under other conditions, for stationary and isolated groups to become biologically adapted to their specialized environment; and this, not once but several times. For mankind throughout the Glacial Age was not only building up by slow degrees his cultural traditions, but also, like the other mammalian forms around him, undergoing the latest (but not perhaps necessarily the last) stages of his biological evolution; and because of his wider extension, and perhaps we might add, his greater genetic plasticity, he was the more capable of wide adaptive variation. Such typical examples of sub-arctic fauna — the mammoth (*elephas primigenius*) and reindeer only appear during the last glaciation, and it has been argued that this is proof that there can only have been one strongly marked glacial extreme in Europe. The answer to that argument is that this specialized cold fauna of the Würmian represents the final stages of a long course of evolutionary adaptation, which in the case of the elephant can to some extent be traced, the *elephas trogontherii* of the early Pleistocene being as it were a 'first sketch' of the mammoth, as the *elephas antiquus* was of the existing forest species. Mankind was also developing throughout the same period in relation to a number of different physical environments, of steppe and tundra and tropical forest, of mountains and plains and river valleys, and adapting himself to every type of climate and all varieties of food. The detailed correlation of physique to habitat has still to be established on firm scientific ground; but that there is some sort of natural relation between, for instance, narrow nostrils and fair skin and a northern habitat on the one hand, and broad nostrils and dark skin and a tropical habitat on the other, is a matter of common-sense observation.* Regional anthropometric surveys, and perhaps a fuller knowledge of the inter-relations between gene mutation and the functions of the ductless glands, may lead in the future to more detailed and positive conclusions. Meanwhile we may claim that the biological concept of adaptive radiation applies within the narrower

human context as in the wider context of evolution generally, and that at all times since its earliest appearance on earth the human genus has been varying continuously in response to a wide variety of physical environments.

Two opposite theories of racial origins have been put forward in recent years. Professor Griffith Taylor has argued, from the geographical distribution of human types, that existing races represent successive waves of emigration from Central Asia, the earliest being the most primitive, and each later one a more highly evolved type. This theory has a seductive logical simplicity; but it contradicts all the known facts of pleistocene archaeology and palaeontology, and the relation of physical types to geographic zones is more readily explained in terms of adaptation. Franz Weidenreich has advanced the opposite view that the main existing races of mankind have evolved from primeval or pre-human forms *in situ* and by stages of parallel evolution. This theory, which has been accepted in principle by Sir Arthur Keith, has the support of a great deal of recent palaeontological evidence. But it seems to me that this evidence is also to some extent equivocal. If, for instance, there is some resemblance between the mandible of the pleistocene fossil type known as *Sinanthropus* and the mandible of a modern inhabitant of the same region—and it is to be noted in passing that resemblances of this kind are very much a matter of subjective interpretation—that may be evidence of a genetic connection between *Sinanthropus* and the existing Mongoloid branch of mankind; but it may also be the result of a similar regional adaptation in two quite separate stocks.' On the other hand the correspondence between physique and habitat is never likely to be more than a partial one, because human groups have been moving into new environments from the earliest ages of pre-humanity until the present day; and the degree of their further genetic modification must depend upon the stage of evolutionary differentiation already reached. Thus, if negroid characteristics are generally the result of adaptation to a tropical habitat, it is nevertheless the case that a negroid people occupied until lately the temperate island of Tasmania, and that non-negroid peoples live in the tropical forests of America. The reason of course is the the physical characteristics of the now extinct Tasmanians, and of the inhabitants of tropical America, were laid down before they severally moved into their present, or recent, habitat; and we find indeed that the latter, though belonging to a stock specialized in another direction, approximate

to the negroid inhabitants of tropical Asia and Africa in respect of their short stature, dark skins and platyrrhine noses²; while their relatives in the temperate zone of North America have diverged from what we may assume to have been the original Mongoloid type towards a more 'European' form. In fine, if the present population of the world displays in its rich variety and mosaic composition the results of millennial migrations, racial inter-mixtures and local adaptations and re-adaptations inextricably mingled, it is reasonable to suppose that the evolution of mankind from its primeval to its modern form, which was conditioned by the slow and repeated climatic and geographic revolutions of the Glacial Age, must have proceeded throughout by similar means, and displayed at all stages a similar variety and complication of forms; and if the extreme sparseness of population would have made inter-mixture between different groups far less likely, the vast time extents involved would have allowed regional adaptation and specialization to have gone to far greater lengths.

We may well be impressed by the utter unfamiliarity of the glacial landscape and strangeness of its pleistocene fauna, such as the *trogontherium* or giant beaver of Europe and Siberia, the *machairodus* or sabre-toothed tiger, giant-antlered *ceruus megaceros*, the early forms of horse and ox and elephant that roamed the treeless plains in vast herds, the mammoth and cave-bear and woolly rhinoceros. Yet it is none the less true that the geographic and climatic framework of the world was already in its main outlines what it is to-day, its west-to-east backbone already laid down, though less denuded then into separate peaks and ridges, and with its three main peninsula extensions of Europe, Africa and Malaya, sometimes more closely linked than now, sometimes more oppressed or more relieved with climatic variations and extremes, but preserving throughout their zonal relativity of climate and typical geographic connections to the central mass. In glacial — in post-glacial times the Old World north of the Equator was the cultural homeland of mankind, and the temperate regions of America and the southern hemisphere outlying provinces, the full human exploitation of which had to wait on the development of modern ocean navigation. America remained cut off by the extreme northern latitude of the land-bridge across the Bering Strait, and possibly during some glacial stages by open water as at present. The fertile parts of Australia were also cut off by sea, as well as by desert and forest; and though an extremely primitive branch of humanity was surprisingly able to cross the

open stretch of water separating the Sunda shelf from a northerly-extended Australia, it contributed nothing to the general advance of human culture, and the outlying islands of this Oceanic region were only peopled within the last two millennia. South Africa, with its much greater accessibility and long periods of pluvial fertility, when wide stretches of open parkland or warm steppe provided a ready and abundant food supply, such as the plateau of East Africa provides to-day, might seem to have been at least as favourably situated as Europe, with its recurrent phases of glaciation. Yet it seems to have become a comparatively backward region in early palaeolithic times; and we may conclude that the equatorial belt provided during some parts of the Glacial Age, as in post-glacial times until it could be circumnavigated, a more formidable barrier to cultural advance than the barrenness of the desert or the northern cold.

Both the original development of human culture and the origins of civilization were the product of human activity, which no geographical generalization is competent to account for. Yet it is significant that western Europe during the final stages of the Glacial Age occupied the same sort of leading position as it has during the last four centuries, and that the area within which civilization originated was also that in which the main advances of savage cultural tradition appear to have been made. The historical division of the world into an East and West with fundamentally separate cultural traditions also goes back to the earliest ages of humanity. Thus we seem able to recognize through all the changes of glacial and post-glacial times certain persistent features of the conditioning terrestrial framework of life. But it is also noteworthy that the highest reaches of savage culture in Europe were attained at a time, not of temperate or sub-tropical warmth, but of cold wind-swept steppe and glaciated tundra, and that, while the climate of North Africa and Hither Asia was most favourable to human habitation during the glacial extremes, the development of agriculture in these regions, which provided the foundation ■ which civilization was subsequently built, took place, not in a period of pluvial fertility, but during a comparatively arid phase.

So much of the Glacial Age. But when we plunge into the abyss of pre-glacial times all familiarity is lost. The proverbially eternal hills are no longer there. Instead of the huge central Asiatic massif of the Pamirs, Himalayas and Hindu Kush, and the

plateau of Tibet, central Asia was a flat plain watered by a huge inland sea, the remains of the ancient central ocean of the Secondary system, named Tethys by the geologists, which at one time stretched east and west across both Old and New Worlds, and which was gradually reduced and broken up by the great folding movements of the earth's crust throughout the Tertiary. During the Oligocene, when the North American continent extended over Greenland and Iceland and the North Atlantic to the British Isles, but when the continents of South America, Africa and Australia were beginning to assume their present shape, the rise of the Hindu Kush and of a narrow, westward stretching Iranian-Anatolian highland separated this great central sea into two main basins, a northern or Sarmatian and a southern or Mediterranean, and blocked the earlier exit of the latter to the Indian Ocean. During the Miocene and Pliocene further foldings increased the extent and height of central Eurasia at the expense of the central sea, and the British Isles became part of an enlarging European continent. India also, previously a separate island or sub-continent, was linked to Asia by the elevation of the Himalayas and emergence of the north Indian plains; while the tilting of the Arabian slab and uprising of the Lebanon and Zagros ranges separated the Red Sea and Mesopotamia from the Mediterranean, and opened the southern exit of the Persian Gulf.

These major geographic changes were accompanied by equally drastic changes of climate. In early Tertiary times warm, moist semi-tropical conditions seem to have prevailed over a wide extent of latitude north and south of the equator, and a wide and continuous forest belt allowed the spread of the earliest primate forms over most of the Old and New Worlds. Subsequently during the Oligocene and Miocene the forest belt shrank. The New World and Old World monkeys developed into independent families; and primitive anthropoid representatives of the latter ranged through southern Europe as well as Africa and Persia and central Asia, where warm forests probably surrounded the wide stretch of inland sea. Gradually, with the rising up of the giant mountain complex of the Himalayas and Tibet, the temperature fell, and with a drier, colder climate the central Eurasiatic forests turned to open parkland, and then to steppe, and the anthropoids retired southward to tropical Africa and India and Malaya.

At some time during this long evolutionary period it is supposed that one simian type, less specialized than the other to an arboreal

mode of life, remained behind when the forest belt shrank away southwards, and took to life upon the ground. The palaeontological evidence is too fragmentary at present for any certain knowledge of the time and place of this separation of the pre-human stock from its simian congeners; nor is it necessary to assume that the origination of humanity occurred only once. The evidence of fossil and existing anthropoid forms in Africa rather suggests that there may have been, under favouring conditions, recurrent steps of advance from a simian to a humanoid form; and there is no reason to suppose that all but one of them were frustrate. In fine, a survey of the abyss of pre-glacial time leaves us with little more than the broad fact of endless geographic and climatic change, harmonizing with a slow evolutionary process, by which the primitive mammalian forms of the Mesozoic or late Secondary gradually, over millions of years, developed the multitude and specialized varieties of their existing genera and species; and among them were the primate forest-dwellers, some of whom, as and where the forests thinned and shrank, took to movement on the ground, and developed into human bipeds.

NOTES

¹ There is also the fourfold division into Primary, Secondary, Tertiary and Quaternary Volumes or Ages, the Tertiary or Age of Mammals including the Eocene, Oligocene, Miocene and Pliocene, and the Quaternary or Age of Man the Pleistocene and Recent. There is, however, no sound biological reason for distinguishing a separate Quaternary Age of Man, and the term introduces an unnecessary complication. I have therefore preferred to use the term Kainozoic, to include the Tertiary and Quaternary.

² *Die Alpen im Eiszeitalter*, Leipzig (1909).

³ Yet it has recently been argued, as against the 'classical' view, that in the valley of the Rhône at least the Würm glaciation far surpassed in extent the Riss, regarded by Penck and Brückner as the most extensive. Cf. Marc R. Sauter, *Préhistoire de la Méditerranée* (1948), p. 11.

⁴ Cf. A. C. Blanc, *Low levels of the Mediterranean Sea during the Pleistocene glaciation in Quarterly Journal of the Geological Society*, Vol. XCIII (1937), pp. 621-651. Also his article in *l'Anthropologie*, Vol. 48 (1938), pp. 264 *et seq.*, *Le Glaciers, considéré aux points de vue paléobiologique et géomorphologique*.

⁵ Cf. J. C. Curry, *Climate and Migrations in Antiquity*, Vol. II (1928), pp. 292-307. It is said that ■ rainfall of 20 inches in Australia allows 600 sheep to the square mile; but ■ drop to 13 inches reduces the number to 60, and ■ drop to 10 inches to 10.

* Cf. Arthur Thompson and L. H. Dudley Buxton, *Man's Nasal Index in Relation to Certain Climatic Conditions* in *The Journal of the Royal Anthropological Institute*, Vol. LIII (1923), pp. 92-122, where it is concluded that there is a positive correlation both in living males and on crania between the nasal index and the temperature, and that a platyrrhine index is associated with a hot moist, and a leptorrhine with a dry cold climate, the intermediate conditions being associated with hot dry or cold moist climate.

† It is a curious fact that the orang-utan, whose habitat is the south-eastern extremity of Asia (islands of Sumatra and Borneo), displays in comparison with the African anthropoids certain of the characteristics which distinguish the Oriental races of mankind from the African, i.e., slowness of gesture, impassive expression, and the 'Mongolian fold' in the inner corner of the eye. Cf. A. Urbain et Paul Rode, *Les Singes Anthropoïdes* (1946), p. 74.

* See Griffith Taylor, *Environment, Race, and Migration* (1937), p. 249. The author attributes these characteristics to 'racial degeneration'.

CHAPTER II

THE EVOLUTION OF MANKIND

ALL LIVING ORGANISMS, including man, are the product of a balance between ■ hereditary pattern and an external pattern of environment; and when this balance is disturbed the organism, if it is to survive, must adapt itself to the new pattern. We may put it that the physical type of an organism is conditioned by its environment; but we must not make the mistake of saying that it is determined by it; for the organism is a focus of activity, and the balance is struck between the mutual response of the two terms to each other. This state of balance or equilibrium also exists within the organism, its growth and functioning being regulated by certain centres, particularly the endocrine organs or ductless glands; and if this internal balance is disturbed, the health and efficiency of the organism is impaired, or destroyed. So, both externally and internally, organic life may be represented as a balance of chemical and biological processes.

As the environment or habitat generally remains stable for any particular species over long stretches of time, ■ continuity of physical character is assured by the mechanism of generation, which at the very threshold of individual life separates off the germ cells from the body cells of the organism, so that they remain unaffected by what may happen to it during its individual life, and hand on the inheritance they incorporate unchanged. Modern biologists are at one in rejecting the old Lamarckian idea that the giraffe got its long neck ■ the cumulative result of successive generations stretching up their heads to the branches of acacia trees. On the other hand more recent embryological experiments have shown that the separation of the germ and body cells is not so absolute as Weismann, the author of the germ-plasm thesis, supposed. In some experiments germ cells have been developed *de novo* from body cells, even in adult animals: by feeding the larvae of certain moths on food contaminated with manganese chloride a colour-change was induced in the adult, which proved to be inheritable as a Mendelian character; and

similarly, specimens of the common white butterfly have been turned green by subjecting the pupae to yellow light, and this change has also been inherited.

According to the dictum of Haeckel ontogeny repeats phylogeny, or, in more popular language, every animal climbs up its own ancestral tree. It might be more correct to say that in the earliest stages of its development the embryo carries the most general characters of the class or phylum to which it belongs, and that there is progressive differentiation, the characters of the class, family, genus, species, variety or race, and finally of the individual, being laid down in turn. As the characters laid down in the earliest stage of development, and which are perhaps carried in the general body of the germ cell, are likely to be the most fundamental and unalterable, so those laid down in the later stages, which are carried in the nuclear bodies or chromosomes within the germ cell, are likely to be less stable and more liable to be affected by miscegenation or the penetrative influence of the environment. Racial characters seem to be bound up in some way with the functioning of the ductless glands, while the individual characters are those which are typically Mendelian in their bodily expression. Probably also the genetic organization is itself liable to change in the process of evolution, later sub-specific characters becoming more unalterable, and new particulate and variable characters taking their place. Wilhelm Roux,¹ one of the founders of physiological embryology, distinguished between first period characters, which are wholly hereditary, and second period characters, which require the stimulus of use for their development. In other words the organism expresses in its basic character the biological past of its species, and its development is to that extent automatic; but the other parts of its character develop only in relation to an environment which stimulates their functioning.

The Mendelian characters, to which reference has been made, are, it is perhaps hardly necessary to explain, unit traits such as human eye-colour, the form of the ripe seeds in edible peas, or hair-colour in mice, which are carried in the chromosomes (or perhaps we should say, particular sections of chromosome), and are typically dimorphic: that is, there are two contrary forms or allelomorphs, both of which may be carried in the inheritance of any individual; but usually only one expresses itself somatically, and in the next generation the two separate out again, so that, for instance, the continuing intermarriage of brown and

blue-eyed individuals will never lead to the prevalence of an intermediate eye-colour. The number of Mendelian characters or genes has been, and is still being increased by breeding experiments; and some biologists have gone as far as to suggest that the whole hereditary complex may be carried in this particulate way. Those known, however, are typically individual or sub-specific; and many of them, such as albinism, night-blindness and brachydactylism (that is, having only two joints to the fingers instead of three), are abnormal and disadvantageous. Though breeders have been able in some cases to improve strains of domesticated plants and animals by the application of Mendelian principles, there is no evidence that they operate naturally in a progressive, evolutionary sense.

After these preliminary generalizations let us turn to the evolutionary process, as revealed on a large scale by the palaeontological record. Here we have to note the many cases of long-continued evolutionary trends, and of evolutionary parallelism or convergence between genetically separate lines or phyla. As instances of the former we have the development of the hoof from the five-toed foot in the horse, the growth in size of the great saurians of the Triassic and Cretaceous systems, the development of antlers among Tertiary *cervidae*, and of shell patterns among certain molluscs. Of the almost numberless cases of parallelism perhaps the most striking is the development among the marsupials of types structurally parallel to those found among the placental mammals: the phalangers of Australia corresponding with the flying squirrels of East Asia, the koala with the sloth, the kangaroos and wallabies with the jerboa, the Australian bandicoot with the Indian, the water opossum of South America with the otter, the Australian with the South American and South African ant-eater. Specially significant also from the point of view of human evolution is the parallel development of the New World and Old World monkeys. In this and some other cases the genetic separation of the two lines might be contested by some biologists¹; but in a very great number of cases it is established beyond dispute by the palaeontological record.

Both these general features of the evolutionary process are summed up in the term 'orthogenesis', that is, evolution in a definite direction. Many biologists dislike the idea of orthogenesis, partly perhaps because it runs counter to the orthodox Darwinian theory of natural selection, partly because it seems to imply what Dr. Julian Huxley calls a 'primary directive agency

in evolution',³ and to open the door to metaphysical interpretations of the kind put forward by philosophers like Driesch or Bergson. It may be pointed out, however, that there is a similar logical objection to the term 'Natural Selection', if it is taken as an active 'principle' or directive agency, instead of being the metaphorical expression which Darwin himself clearly stated it to be.⁴ Expressed in direct and unmetaphorical language the 'law of natural selection' amounts to the statement that any group of organisms tends to be perpetuated through the individuals best adapted to their environment, that any change in the individual organism which happens to increase its efficiency is likely to be perpetuated in its descendants, and that a species may gradually in this way evolve into a number of distinct species, each adapted to a separate habitat.⁵ Similarly if the term 'orthogenesis' is given its simple meaning of evolution in one particular direction, it amounts to not much more than 'the obvious fact that in evolution the present and future of an organic type is partly determined by its past'.⁶ In short, both 'natural selection' and 'orthogenesis' are descriptive terms, and to treat either one or the other as an 'active principle' or agency is to talk in metaphors or metaphysics.

Darwin's great work *The Origin of Species* was epoch-making in two ways: first, it established as a fact, what had hitherto been a disputable hypothesis, that all living organisms, including man, have gradually evolved from the simple original forms of life; secondly, it offered an explanation of how such evolution might occur, in an argument that combined to an extraordinary degree wealth of knowledge and experience with lucidity and practical common-sense; and this explanation was accepted with enthusiasm by the dominant scientific materialism of the time, because it seemed finally to eliminate teleology from the processes of nature, and to provide instead a completely mechanistic formula. It is in the second sense only that 'Darwinism' is to-day still in dispute; and the progress of critical thought since his day should allow us to treat the question at issue, as Darwin himself did, without theological *parti pris*. If the rather naive brand of materialism of which Haeckel was the typical later nineteenth-century prophet is still in favour with the Marxian socialists, the question for the rest of us is not one of mechanism *versus* teleology, but simply of which generalization most adequately covers the field of observation.

Let us note in the first place that Darwin's theory is, as

Julian Huxley calls it, 'extremely abstract and generalized'.⁷ It may well apply in a general way to the whole vast process of organic evolution, without applying with equal force to every chapter of it. It is most applicable where, as in many lower forms of life, only a very few of the embryonic forms produced in every generation survive to maturity, and far less applicable where, as among the higher mammals, births are comparatively few and the proportion of those surviving to maturity is comparatively high. A second point is that in a stable environment natural selection operates in a conservative instead of an evolutionary sense, eliminating deviations from the norm, which embodies an already established adaptive balance. This process of elimination of abnormal variants has been demonstrated experimentally in the case of insects: it is also illustrated negatively on a much larger scale in the results of geographical isolation, where the pressure of competition has been withdrawn, or greatly reduced, as in the ■■■ of the extraordinary proliferation of Lemuroid forms in Madagascar; and similarly the development of the marsupials in Australia may be ascribed to the absence of competition from the more advanced placental mammals. On the other hand natural selection clearly does not operate, except at a very long remove, in the ■■■ of those specialized trends, such as the growth in size of the mesozoic saurians, or the antler development of some Tertiary *cervidae*, which are unfavourable to survival, and lead finally (but only after thousands of generations) to the extinction of the species.

The main area of dispute, however, lies in those adaptive changes in response to a new environment which are perhaps the most pervasive and striking characteristic of the unending surge and multiplicity of life; and the crucial point here is that, according to the Darwinian theory, the original material of such changes is provided by small 'chance' individual variations, which are then sifted out through the struggle for survival. The development of embryological studies has indeed to some extent corrected the notion of 'chance', which Darwin himself describes as "a wholly incorrect expression, but it serves to acknowledge plainly ■■■ ignorance of the cause of each particular variation"⁸; and it is now generally accepted (1) that heritable changes occur only through gene-mutation; (2) that such mutations sometimes occur not individually but simultaneously in a large number of individuals; (3) that gene-mutation may effect ■ whole series of further changes in the organism, through the adjustment of what

Goldschmidt calls its 'organizational pattern' during the process of growth; (4) that both the mutation and the correlated somatic changes to which it gives rise will conform to the more general hereditary type or pattern of the species. Thus for the Darwinian conception of small 'chance' individual variations we have to substitute that of germinal mutations, producing either minor or major systematic changes in the organism, of a definite kind, and in relation to a limiting or conditioning external environment.

But the question still remains whether these mutations are not accidental in the sense that they are as likely to be deleterious as they are to be advantageous, and whether the evolution of new forms takes place gradually over a very great number of generations, or by a comparatively short series of saltatory or systematic changes. Experiments tend to show that the great majority of gene-mutations are deleterious; but it may be questioned whether artificially induced mutations provide a true model for those occurring naturally by a process of which we are ignorant. If on the other hand we suppose that major environmental changes saturate through to the germ-plasm, we still have to explain how such changes produce an adaptive response in the organism; and the theory, such as Semon's theory of the Mneme, that recurring penetrative stimuli may accumulate from generation to generation until they produce an adaptive mutational effect, is not only incapable of experimental proof, but also leaves the mechanism of such a response completely obscure. Personally and speaking as a layman of the science, I must confess that I find it equally difficult to imagine such a radical adaptation as that of a land animal to marine life taking place either by a sudden saltatory transformation of the organism, or through a series of gradual changes over a great number of generations, and the elimination in each generation of those less fitted to survive in the new medium. Yet it is known that during the Jurassic era this adaptation occurred in no less than six separate orders of reptiles. But if this question of the *modus operandi* of adaptive change must remain open, let us beware in any case of the common and logically reprehensible habit of regarding living creatures as more or less passive instruments 'moulded', whether by external circumstances or some kind of 'internal principle'—a habit which finds perhaps unconscious expression in the term 'plasticity', as normally applied to organisms with a high capacity for genetic mutation and evolutionary change. Let us rather take the attitude that every organism embodies a balance of internal and external processes, and that

orthogenesis and natural selection express the two complementary terms of this balance. If, when we consider the marvellous and unending adaptation of organisms to their environment we are more conscious of their environmental conditioning, the no less universal homologous patterning of the main phyla and classes of organisms, the prevalence throughout of parallel and convergent evolution, and the fact that evolutionary change sometimes takes forms which are not adaptive, require us to recognize no less clearly the positive potentialities and genetic exuberance of all living forms, as being the very quality of life itself. As for the concepts of agency and purpose, they belong to the sphere of human action, and are logically inappropriate outside it.

Some other characteristics of the evolutionary process which confirm this conclusion call to be noticed. The first of these is that each separate part of an organism may evolve independently, either adaptively as in the case of teeth to different kinds of diet, or of the feet to different types of habitat, or orthogenetically as in the case of the shell of the ammonites, or the development of the canines in *machairadus*, the sabre-toothed tiger. This characteristic is in conformity with the Mendelian conception of particulate inheritance, and directly contradicts Cuvier's principle of correlation, according to which "all the organs of an animal form a single system, the parts of which hang together, and act and react upon one another; and no modification can appear in one part without bringing about corresponding modifications of all the rest".⁹ One consequence of this independent adaptive evolution of parts is that species of widely separate genetic series may in some particular closely resemble each other: e.g., the teeth of the probably herbivorous eocene monkeys are extremely difficult to distinguish from those of the eocene horses. The moral, in the field of human palaeontology, seems to be that the reconstruction of extinct types from fragmentary fossil remains is an extremely hazardous business: the teeth, which are the bony parts most often preserved in geological strata, are also the parts taxonomically the least reliable.¹⁰

A second general principle is that, in geological time, periods of comparatively rapid evolution have alternated with periods of relative stability or limited variability. Possibly the former may be correlated with periods of marked physical and geographical change in the earth's surface. During the Glacial Age, for instance, there was an exceptionally rapid rate of evolution. (It must be remembered here, however, that the word 'rapid'

means tens of thousands instead of millions.) But it seems also that these periods of 'explosive evolution' generally follow the acquisition of some fundamentally new adaptive character, such as that of jaws and lateral fins in fishes, or of warm-bloodedness in animals, leading to an unchecked development of a whole new 'kingdom of life'. Of the origin of these major structural advances, however, we have to confess our ignorance.

Another closely related principle is that groups and classes have, like individual organisms, their periods of youth and old age, that a period of great variability and rapid change may be followed by long periods of genetic immutability, or by senescence leading to extinction. Such age-periods are particularly noticeable among the invertebrates. Thus a whole group of ammonites towards the end of the Cretaceous fell back into the crudity and simplicity of their early ancestral shell-forms before finally dying out altogether. Among vertebrates also excessive size or the hypertrophy of certain parts, such as horns or tusks, has been the prelude to extinction. Such degenerative tendencies are, however, by no means universal, many very ancient forms of life showing no signs of them, while comparatively 'young' and variable forms may suffer extinction through a variety of causes.

The evolution of living forms is often depicted under the guise of a tree throwing off branches which spread out again into minor limbs and shoots innumerable. This metaphor helps us to picture, if not to understand, some of the leading characteristics of the evolutionary process. For as the growth of a new shoot must conform to its position on the larger branch, but may also tend towards the shoots from other branches, so each new type or species carries forward the generic heritage of its class and family, but may also in particular parts show convergence towards species belonging to a different family or phylum; and as the branches of the tree spread out to narrower twigs, ever more limited in the direction of their growth, so living species as they diverge further from the main stem become more and more specialized, until they reach a final stage where they can survive only so long as their environment remains unchanged. Here is illustrated Louis Dollo's principle that evolution is morphologically irreversible, though there may be recurrent adaptations to environment. Thus among the marsupials a primary arboreal stem led on to terrestrial forms represented by the kangaroos and wallabies, one aberrant member of which, the tree kangaroo (*dendrolagus*) has

returned to an arboreal life in the tropical forests of North Queensland and New Guinea; but its anatomical structure remains essentially terrestrial, its re-adaptation to life in the trees having only altered the relative proportions of its parts. This principle might perhaps be expressed in genetic terms by the statement that the mutation potentialities of any germ cell are very great, but not infinite in number, so that the field of future change is gradually narrowed, and in the case of extremely specialized forms may finally dwindle to nothing.

The human race belongs to the order of Primates, which is generally taken to include the lemurs, monkeys, apes and man, though a few zoologists would exclude the lemurs, and most divide the Order into two sub-orders, one containing the lemurs, and the other all the other primates, including the tarsiers; but the latter are sometimes placed in the other sub-order of lemuroids or *prosimias*. The tarsier (*tarsius spectrum*) is a little tree-dwelling animal of Malaya with immense eyes, long, thin tail and greatly elongated tarsal portion of the foot; it sleeps by day, and at night feeds on insects and lizards, hopping from bough to bough. It is the most primitive of the primates, having some resemblances to the lowest orders of placental mammals, and even to marsupial and pre-mammalian forms, but also in some respects being nearer to man anatomically than any other animal. It is already represented, at the base of the Eocene, by the fossil form *anaptomorphus*; and it was from some such primitive tarsiod form that the line of monkeys and apes evolved during this geological age, or possibly even earlier.

The monkeys are divided into the two main branches of New World platyrrhines and Old World catarrhines, which had diverged from one another before the close of the Eocene while still in a predominantly tarsiod stage. The Old World monkeys are represented by several fossil forms of the Oligocene and Miocene, the earlier of which still display tarsiod characteristics. Owing perhaps to their wider geographical distribution they developed a richer variety of forms than those of the New World, and during the Pliocene and Pleistocene were spread all over Asia, Africa and Europe. From the primitive catarrhine stem sprang at the beginning of the Oligocene the line of apes or anthropoids, that is, the gorillas, chimpanzees and orang-utans; the gibbons are sometimes included among the anthropoids, sometimes classed in a separate family of *hylobatidae*. The apes and gibbons are

distinguished from the monkeys by their larger brains, greater bulk, elongation of their fore limbs and absence of tail, ■ also of certain other simian specializations. As an accompaniment of these bodily changes they have become partly terrestrial animals, and their movement in the trees is by climbing, or brachiating, instead of swinging. Probably near the base of the anthropoid-hylobatid stem is to be placed the lower oligocene fossil form *propliopithecus*, which appears to have been a small, agile animal, with legs longer than its arms, comparatively large brain and small jaws, and moderately large eyes, mainly diurnal in its habits and using an erect bipedal movement in trees. During the Miocene this line is represented by various fossil remains, mostly teeth and jaw fragments, from all three continents of the Old World, among them *pliopithecus* of Egypt, probably ancestral to the gibbon, the later very widely distributed *dryopithecus*, some types of which approximate to existing species of gorilla and chimpanzee, while others show a closer approximation, especially in their dentition, to mankind, and the earlier *proconsul africanus*, of which a nearly perfect skull and some limb bones have recently been discovered in East Africa, in company with a large number of other fragments, representing ■ great variety of fossil types not yet classified, and ranging in size from that of a small gibbon to that of a large gorilla. By these important new discoveries *proconsul* is revealed ■ a generalized or transitional form, with several monkey-like characters in the shape of the jaw, nose opening and brain convolutions; while the limb bones indicate a light, agile creature fitted to running and leaping, and without the specialized arms of the ape. The earlier discovered but less well known *lymnopithecus* from the same region is smaller in size, but apparently approximates more closely in the formation of its teeth to the human type and to that of *australopithecus*, the fossil type represented by the probably pliocene remains from Taung in the Transvaal.

These last, together with those more recently discovered by Dr. Broom of the Transvaal Museum at Sterkfontein and Kromdraai, and named by him *plesianthropus* and *paranthropus*, form ■ group (named collectively *australopithecinae*) representing one of the latest and closest stages of anthropoid evolution towards the human, combining with a predominantly anthropoid brain-pan and muzzle ■ close approach to humanity in their masticatory system, and perhaps more surprisingly, in their limbs, from the formation of which it is to be inferred that they could stand

upright and walk erect almost in human fashion. Indeed Dr. Broom, who has recently produced evidence that these fossils are a good deal older than was supposed, *Plesianthropus* being dated to the upper Pliocene, and *australopithecus* possibly to the middle Pliocene, claims them as the direct ancestors of humanity. His views, however, have not as yet been generally accepted; and since *paranthropus* at least dates only from the early Pleistocene, when fully human creatures are known to have been in existence elsewhere, it seems as likely that these South African anthropoids with near-human characteristics represent a separate and to some extent parallel development of bipedism in response to the relatively arid conditions of this rather isolated southernmost nook of the Old World, as the baboons, the South African species of which (the *chacma* or *papio porcarius*) they perhaps hunted, may have developed quadrupedism at more than one time and place in response to similar conditions. In any case there can be no doubt that of all known fossil types the *australopithecines* conform most closely to the ideal conception of a 'missing link' between the apes and mankind; and they are of particular interest as suggesting that in the process of human evolution the acquisition of bipedal movement preceded the development of the human brain.¹⁴

Man's close evolutionary relationship with the anthropoid-hylobatid group of Primates is indisputable; but he is distinguished from all existing species of the group by his relatively longer legs and shorter arms, by his retention of the nasal bone, which in apes and monkeys loses its identity by fusion, by his upright posture and the distinctive structure of his foot, with its dominance of the big toe and rudimentary development of the other four, and by his big brain. While he resembles the gorilla and chimpanzee most closely, he also shares certain characteristics with the orang-utan, others with the Old World monkeys, and yet others again with the New World monkeys; and in general it may be said that man contrasts with all the living primate species by retaining many anatomically primitive characters. Where did his ancestors branch off from the primate stem? According to some authorities, especially the American biologist William King Gregory, *dryopithecus* may be regarded as the common ancestor of man and of the gorilla and chimpanzee. Other authorities, such as Boule and Elliot Smith, prefer a more cautious agnosticism; while Wood Jones has argued that man's separate descent goes back to the very base of the primate stem. The recent discoveries,

while not confirming Wood Jones' extreme position, have certainly weakened the argument for the view taken by Gregory, in so far as they have emphasized the astonishing variety and 'plasticity' of primate forms, and the prevalence among them of orthogenetic or parallel evolution, which, according to Zuckerman, both physiology and morphology require us to postulate, in order to explain "the seeming chaos of their classifications".¹² If such parallelism is a predominant characteristic of the primate evolution, the fact that man is anatomically closer to the gorilla than the latter is to any of the non-anthropoid primates cannot be taken as proof of a close genetic relation; and if *paranthropus* and *australopithecus* display human as well as baboon characters not found among living or pliocene anthropoids, it seems the more likely that both they and mankind derive from a much earlier, pre-dryopithecoid form. Perhaps the gorilla might be taken to illustrate rather Dollo's law of the irreversibility of evolution. For while the gorilla, like man, has descended from the trees to live upon the ground, he has been unable to reverse his prior adaptation to ■ arboreal life, which must have taken place during the Miocene and Pliocene, and is neither biped nor quadruped nor quadruman, but an awkward blend of all three. On the other hand if man's highly specialized bipedism implies that his ancestral stock remained relatively 'plastic' and unspecialized to arboreal conditions, the discoveries in East Africa provide evidence of the existence of such a stock in the early Miocene, and suggest that both gibbons and apes and men may be derived from a primitive, undifferentiated catarrhine stem of the Oligocene.

Of known fossil types, then, only *propliopithecus* in the early Oligocene, *proconsul* and *limnopithecus* in the early Miocene, and the *australopithecines* in the Pliocene are likely to be in or near the line of human descent from the original primate stock. We may suppose that after an early descent from the trees this ancestral group went through ■ period of marked genetic variability, comparable with the Siwalik period among the apes, and later Madagascar period among the lemurs, and that one or more members of the group tended to increase in size and bipedal specialization throughout the Miocene. Central Asia, and in particular the Gobi desert, has been regarded as the most likely home for our pre-human ancestors; but this conjecture has as yet no fossil evidence to support it, and it might with equal justice be supposed that the stages of evolutionary growth and differentiation were not confined to a single locality, and that the fossil and

existing races of mankind had a multiple rather than a single origin. The broad fact is that until the emergence of the first human forms at the beginning of the Pleistocene the course of human evolution from the primate stem has still to be certainly charted.

The specific bodily characteristics of mankind are upright progression and a large brain. Upright stature depends, not only on the highly specialized form of the human foot, but on the broadening of the pelvis to support the abdomen, a quadruple (instead of a double) curvature of the spine, to bring the neck and head immediately above the pelvis, and a shifting forward of the occipital orifice of the skull and reduction of the jaw or muzzle to enable the head to be balanced on top of the spine, instead of projecting forward in front of it. And these anatomical adjustments made possible in turn the reduction of the heavy supra-orbital ridges, previously required as muscle attachments, and the upward expansion of the skull. Thus the whole anatomical *facies* of humanity hangs together, and while the fossil evidence indicates that the development of bipedism preceded the development of a fully human type of brain, it also suggests that there may have been more than one line of evolutionary development, and that existing races may have progressed to the same end by different roads, that is, by a series of gene mutations occurring in a different order. Again, in some of these anatomical features the ape approximates to the human type much more closely in infancy than in adult life; ■ that the evolution of humanity might be represented as a slowing down of the growth stages and extension of infantile characteristics over the adult life. In particular the high growth rate of the brain, which in apes and other mammals falls off sharply at an early stage, in man persists to maturity and beyond; and this high growth rate varies inversely with the growth of the jaw or muzzle, the arrest of which in man (as also, in some breeds of dog) allows the continued 'doming' of the skull.

Except for his large brain and bipedism man, as a natural species, is relatively 'primitive' and unspecialized. It is through this combination of characteristics that he has been able to spread over and populate the world, adapting himself to the most varied physical conditions and habits of life, and showing also a wide capacity for genetic variation. He may be regarded as biologically 'young'; and we may wonder therefore whether he might be capable under favourable conditions of further evolutionary progress. A further slowing down of the human growth rate does in fact seem to have occurred among certain peoples in historic

times, and to be occurring still to-day. On the other hand the increasing difficulty of parturition sets a limit to the size of the human brain, while it is an observed fact that the very highest type of mental endowment is often associated with sterility, or physical debility: at least, it seems likely that, whether from social or biological or other causes, the most highly developed individuals of ancient and medieval times have comparatively few descendants living to-day.

The apes are not ancestral to humanity, and are possibly more remote from us on the genealogical tree than the more primitive gibbons. Morphologically intermediate between monkeys and men, they have proved less successful biologically than either of the other two kinds. During the earlier Tertiary phases they were distributed over all the continents of the Old World; but they are now confined to a comparatively narrow belt of tropical forest in Africa and Indonesia, where, it may be noted, the most primitive races of mankind, the pygmy Negrillos and Negritos, are also to be found; and it seems likely that the gorilla and orang-utan are gradually dying out. Yet they form none the less a link between us and the animal world, and the study of them may perhaps throw a little light on the obscure subject of our human origins. But we need to observe a double caution. In the first place we must recognize that, since the only mind we are acquainted with is human mind, we must inevitably interpret all animal behaviour in human terms, and can only understand it in so far as it resembles ours. There is an obvious danger here lest we extend too far the area of resemblance, and in the process of interpretation indulge our individual quirks of temperament. On the other hand the theory that behaviour can be adequately explained in 'objective' terms of reaction to stimuli gets us nowhere, and is based on the elementary logical fallacy of treating the term 'environment' as a purposive agent, as the experimental psychologist himself is. That animals and persons can be 'conditioned', educated, trained to perform tricks, or react to a certain set of stimuli is obvious and indisputable. But in its natural environment and not as an artificially isolated object of experiment, the animal, like the person, is as much active as passive, and an individual unique in its innate disposition and its experience. Criticism in recent years has amply demonstrated the impossibility of explaining animal as well as human behaviour in terms of the conditioned reflex.

These difficulties we are particularly aware of as soon as we attempt to assess or understand the intelligence of apes. That they approach nearer to the scale of human intelligence than any other animal is generally agreed; but it has not been demonstrated, and is probably incapable of demonstration, in the scientific sense. Apes and monkeys enjoy a greater range of personal experience than the other mammals because of their fully developed binocular and chromatic vision, and their co-ordination of hand and eye. Yet it cannot be said that their manner of behaviour and of solving problems evidences a different kind of intelligence from that exhibited by other mammals, such as cats and dogs; and it is highly doubtful whether we can experimentally distinguish 'insight' as a higher form of intelligence from 'trial and error' as a lower and more mechanical form of it. Again, though there is an obvious evolutionary connection between increase in size of the brain and the development of mind or intelligence, it does not follow that every increase in the size and weight of the brain is accompanied by an increase in intelligence. The gorilla has the largest brain among the apes,¹³ and one which strikingly resembles that of man in the development of the cerebral hemispheres; but the general opinion of those with experience of the two kinds is that the gorilla is much inferior to the chimpanzee in intelligence. Nor is the common assumption that the frontal lobes of the brain are the seat of intelligence borne out by the experiments of Lashley with rats,¹⁴ nor by clinical experience of brain injuries during the two wars. Perhaps our chief conclusion here is that, for all his anatomical resemblances to the apes and other primates, man is separated from them as absolutely as from all the other animals through his cultural heritage of articulate speech. Speech is such a fundamental part of all our thought and experience that we can hardly give the terms meaning apart from it; and the apes are no more capable of speech than are the other animals.

Less difficult, though less amenable to the measurements of science, is the interpretation of the affective behaviour of apes; and there can be little doubt that many of the fundamental human feelings—rage and fear, affection and hatred, pride, grief and jealousy—are shared by them. According to Nadia Kohls, the Russian experimental biologist, the chimpanzee is closer to man in his affections than intellectually; and Cherry Kearton in his book *My Friend Toto* has recorded how close a young chimpanzee may approach to the status of a human companion. The

lively, playful temperament of the young chimpanzee contrasts with the quiet, brooding, melancholy of the orang-utan and the moodiness of the gorilla: perhaps the 'introverted' character of the two latter may be connected with the fact that they are dying out. Particularly notable is the chimpanzee's fondness for rhythm and dancing. According to Garner¹⁶ chimpanzees in their native haunts prepare a dancing-place by spreading clay over a peat bed; and after it has dried they assemble at night, and while one or two beat violently upon the ground, which gives out a sound like a drum, the others jump wildly up and down; and they take turns. This story needs corroboration; but dance-like activities, connected in some cases with sexual feeling, have been described by many observers: these include the 'spinning' dance of a pair, and the rhythmic movement of a group round a post, in a circle and keeping time. We can hardly doubt, then, that man's dancing habit, and presumably the emotion-complex associated with it, go back to his pre-human past. Another remarkable habit which the apes share with the monkeys is self-mutilation. Tinklepaugh¹⁷ records the case of a male rhesus monkey which, when separated from his mate, bit himself violently in the legs; and the self-mutilation of caged monkeys is by no means an uncommon occurrence, and seems usually to be an expression of thwarted rage. Among orang-utans living in a natural state absence of the nail or even the whole last joint of the great toe is extremely frequent, and seems most probably a self-inflicted injury, though one observer has suggested the possibility that it is an intentional mutilation inflicted by the mother on its offspring. Human practices of bodily mutilation and scarification go far back into the ages of prehistoric savagery, and we may wonder whether this strange impulse to bodily mortification may not derive from obscure pre-human roots.

The social life of apes is still very imperfectly known, owing to the great difficulty of close and prolonged observation of them in their native haunts; and captivity sets up artificial conditions which may have a completely distorting effect. There are, however, a few important generalizations to be made. The social life of the ape, as of man, is based on the family group of a mature male with his mate or mates and young; whereas among the lower mammals the male usually stays with the female only during the breeding season. This is attributed to the fact that apes (and monkeys) have an uninterrupted sexual life, whereas most other mammals have a limited season of rut.¹⁸ Chimpanzees and

gorillas are sometimes found in bands of from twenty to thirty under the leadership of an old male, and the immature of both sexes also form bands, after they have left the family circle and have not yet set up for themselves. But these are temporary associations: the family provides the stable social unit.

Some writers have claimed that the chimpanzee and gorilla are monogamous; others, the majority, have asserted the contrary. The likelihood is that, according to its circumstances and powers, the male may have one or more mates. Frank Buck¹⁸ describes how a band of chimpanzees consisting of an old male, two mature females, one with a suckling, and eight young animals, 'camped' for the night, feeding together, and the three adults keeping order, and how the male finally retired with the non-nursing female. Such a party may be taken as a normal one. Yet polygamy could only be a universal practice if there were a very large excess of females over males; and we have no reason to suppose that such a preponderance of female births is a specific character of either the gorilla or chimpanzee; but it is likely that there is a considerably higher death rate among the young males owing to their greater independence and adventurousness, and perhaps also through sexual or other fights among themselves. But the apparently conflicting evidence suggests that besides the males with two or more mates there are others who have to be content with one, or none; and the occurrence of old solitary males among both the African kinds, as well as among the orang-utan, the least known and apparently most solitary of the apes, indicates that the males in old age tend to give up family life, either from choice or necessity. Solitary females on the other hand are very rarely met with.

In all the three genera the young leave their parents some years before they reach maturity, and form bands or troops, who at night establish their own camps; and it is at this stage, presumably, that the selection of partners takes place. Zuckerman, in his account of the captive baboons on Monkey Hill at the London Zoological Gardens,¹⁹ records the continual fighting for females, leading to frequent deaths, especially of the females fought for. But—apart from the fact that baboon behaviour is no sure guide to the behaviour of apes—it is clear that the artificial conditions of captivity produced a wholly abnormal complex of behaviour. On the centrally important topic of how mating takes place in natural conditions we have no information, but may hazard the guess that the interval between leaving the parental circle and permanent mating is much shorter for the

female than the male. The conclusion in any case is that the family is pre-human; and in spite of the revolutionary change brought about by the institution of the incest taboo, the prevalence in uncivilized societies of 'bachelor houses' for the adolescents of one or of both ■■■■ seems to have its pre-human foreshadowing in a threefold social and sexual division of life among the apes.

One last point. Among all the apes the female is physically much smaller and weaker than the male, and this physical inferiority seems to be accompanied by a complete domination of the female by the male. Zuckerman, for instance,¹⁰ refers to the 'harem' of a captive chimpanzee who demanded from his spouses complete sexual submission. Marked sexual differentiation is also found among the early types of mankind, including the earlier representatives of *Homo Sapiens*. But in historical times this physical disproportion has been greatly reduced, or eliminated. Are we to explain the original disparity between the sexes in terms of natural or sexual selection, and associate its subsequent reduction with the earliest stages of advance from savagery to a food-producing economy, when it seems likely that women played a new and increasingly important part in the life of the community; or are we rather to regard the reduction, which has probably gone farthest among the yellow-skinned or leiotrichous peoples, as an orthogenetic evolutionary trend?

NOTES

¹ See E. S. Russell, *Form and Function* (1916), p. 322.

² Cf. Elliot Smith, *Proc. Zool. Soc.*, 1920, p. 471: "Anyone who conscientiously investigates the anatomy of the Platyrrhine Apes, and attempts to interpret the vastly complicated series of cerebral transformations that were necessary to convert a Tarsioid into a Monkey, must be forced to admit that this did not happen twice."

³ *Evolution: The Modern Synthesis* (1942), p. 465.

⁴ *Origin of Species*, 6th (popular) edn., p. 99: "In the literal sense of the word, no doubt, natural selection is a false term; but who ever objected to chemists speaking of the elective affinities of the various elements? . . . Everyone knows what is meant and is implied by such metaphorical expressions; and they are almost necessary for brevity." In spite of this clear-headed statement of his own use of the term, it is doubtful whether the meaning and implication of such metaphorical terms are in fact generally understood. If they were, how many philosophical disputes we should be spared!

¹ Cf. Darwin, *op. cit.*, pp. 159-161.

² R. Goldschmidt, *The Material Basis of Evolution* (1940), p. 322.

³ *Op. cit.*, p. 125.

⁴ *Op. cit.*, p. 164.

⁵ *Histoire du Progrès des Sciences naturelles depuis 1789* (1826), Vol. I, p. 310.

¹⁰ Yet there have been some triumphant successes, as when Professor Davidson Black identified Peking Man or *Sinanthropus* from a single tooth, before any other remains were discovered.

¹¹ See R. Broom and G. W. H. Schepers, *The South African Fossil Ape-Men: The Australopithecinae* (Transvaal Museum Memoirs, No. 2, 1946), and the review by H. V. Vallois in *l'Anthropologie*, Vol. 51, pp. 89-96; also G. Arambourg, *La Genèse de l'Humanité* (1948), ch. V, and W. E. Le Gros Clark, *History of the Primates*, 2nd edn. (1950), pp. 63-74. Professor Le Gros Clark is more sympathetic to Dr. Broom's claims than are the two French writers.

¹² *Functional Affinities of Man, Monkeys and Apes* (1933), pp. 176-177.

¹³ Largest absolutely, but not relatively to its body weight. The comparative measurements given by P. Tilney, *The Brain from Ape to Man* (1928), are as follows:

	Brain Weight	Body Weight
Man	1100-1500 c.c.	150 lbs.
Gorilla	450 c.c.	300 lbs.
Chimpanzee	350 c.c.	150 lbs.

¹⁴ See K. S. Lashley, *Brain Mechanisms and Intelligence* (1929).

¹⁵ R. L. Garner, *Gorillas and Chimpanzees* (1896), pp. 66-67.

¹⁶ See S. Zuckerman, *The Social Life of Monkeys and Apes* (1932).

¹⁷ So Zuckerman, *op. cit.*, pp. 29 *et seq.* But his statements are questioned by Westermarck, who also produces evidence of durable unions among many other mammals. See *Three Essays on Sex and Marriage* (1934), pp. 167 *et seq.*

¹⁸ See R. M. Yerkes and A. W. Yerkes, *The Great Apes* (1929), pp. 247-249.

¹⁹ *Op. cit.*, pp. 219 *et seq.*

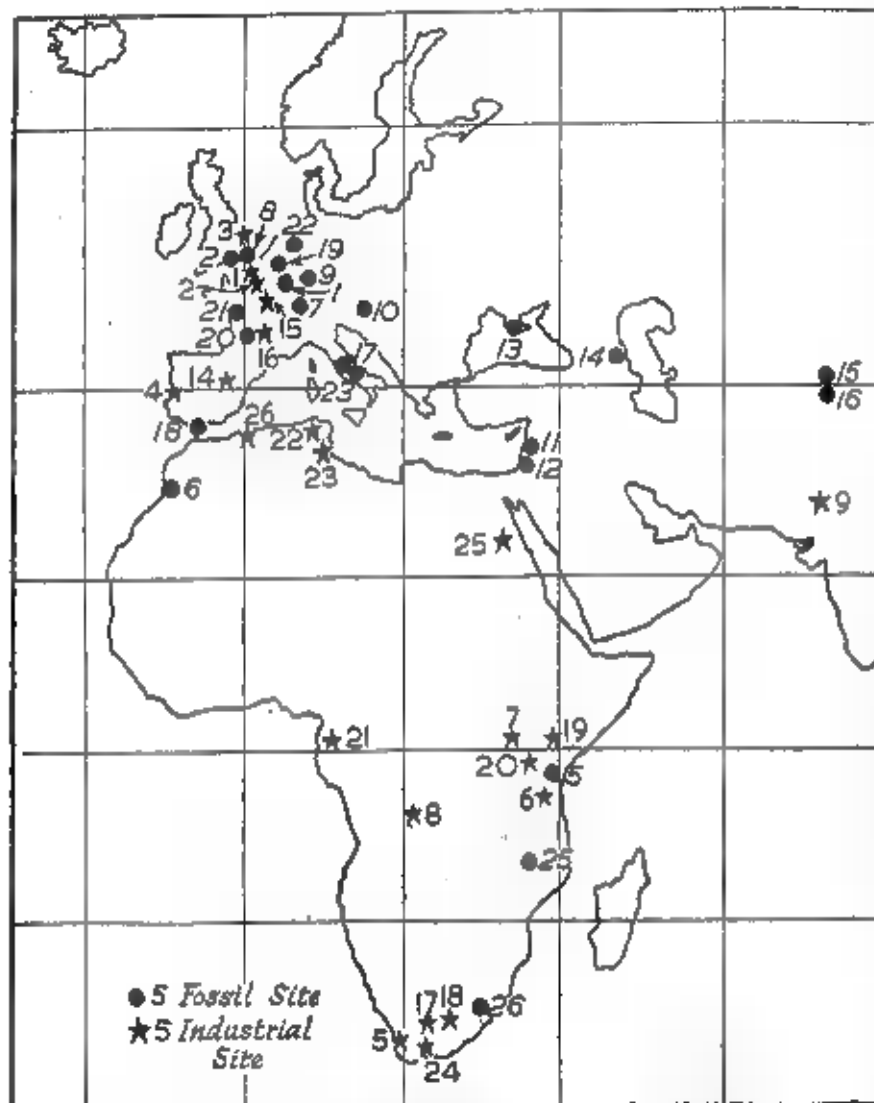
²⁰ *Op. cit.*, p. 178.

THE AGES OF PRIMEVAL SAVAGERY

THE DRAMA OF humanity opens in a mist of uncertainty. According to some authorities it opens, or had already opened, at a time when a semi-tropical North Sea washed over coral reefs along the coast of East Anglia, when hippopotami basked on the banks of the Thames, the mastodon and giant sloth lumbered through neighbouring forests filled with monkeys, while the antelope, gazelle and little three-toed ancestor of the horse browsed and sped across the open glades. In this almost incredibly remote pre-glacial era there were, it is held, creatures living in what is now England, who hunted and chipped flints and knew the use of fire. And at a later period, when the climate was considerably cooler, but before the coming of the first glaciation, there existed almost side by side in the same region three separate human groups, each with its own distinct tool-making tradition.

There is nothing inherently improbable in the theory that there existed before the beginning of the Glacial Age in Europe creatures who were crudely chipping flints for tools. Indeed we must assume on general grounds of probability that the earliest flint industries with a definite technique must have been preceded by long ages of much cruder workmanship, when stones were cracked and chipped to produce ■ cutting edge without any attempt at precision of shape; and since as a rule the earliest ages of culture are the longest, we might reasonably assume that the eolithic age before the establishment of definite industrial techniques lasted ■ long as the whole subsequent stretch of human life and culture. But the difficulty is to distinguish the crudest stage of human manufacture from the natural fractures produced by erosion, crushing and other geological changes; and many archaeologists deny that the stones claimed as eoliths are the work of human hands. Also it must be admitted by those of the opposite party that these eoliths add little or nothing to our knowledge of the earliest, pre-glacial ages of humanity, beyond confirming our belief in their existence. So we must be content with

Map III. Fossil and industrial sites showing evidence



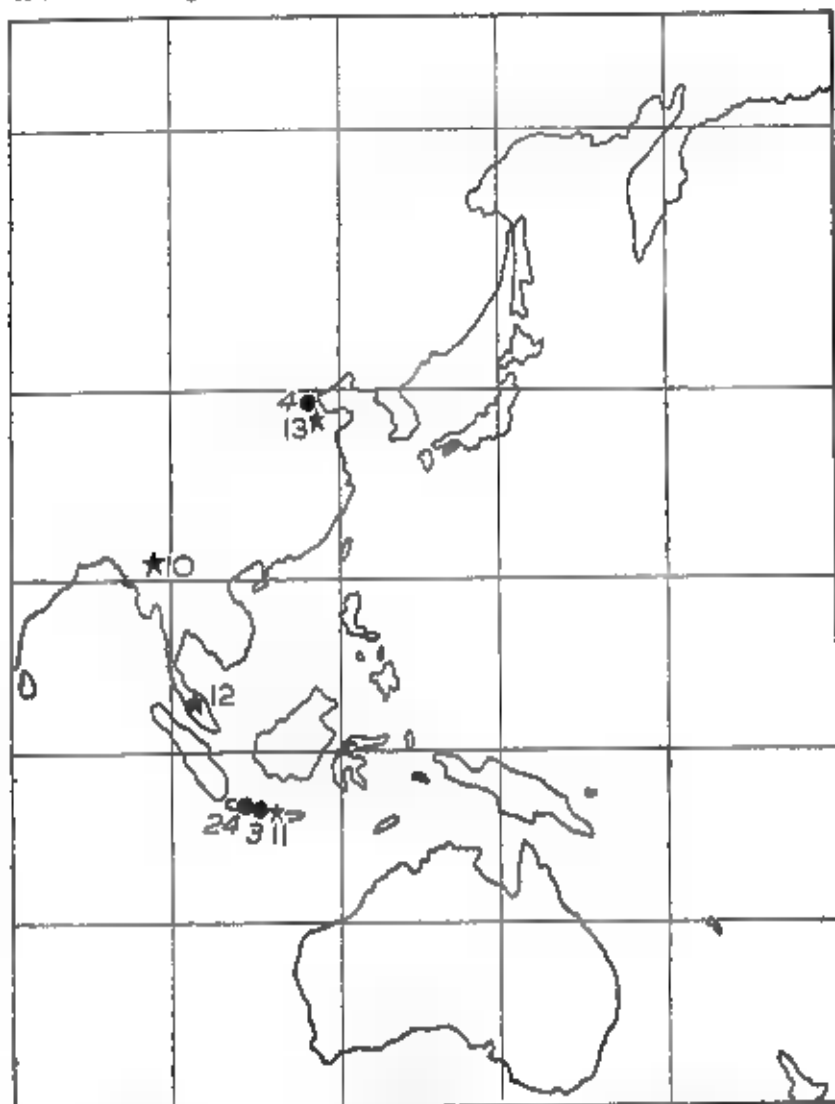
Fossil Sites

- 1 Heidelberg (Mauer)
- 2 Piltdown
- 3 Trinil
- 4 Choukoutien
- 5 Lake Eyasi
- 6 Rabat
- 7 Steinheim

- 8 Swanscombe
- 9 Ehringsdorf
- 10 Krapina
- 11 Galilee
- 12 Mt. Carmel
- 13 Kük Kobä
- 14 Piatogorak
- 15 Tashkent
- 16 Zaytobash Darya
- 17 Saccopastore
- 18 Gibraltar

- 19 Spy
- 20 La Nauvette
- 21 La Chapelle
- 22 Le Moustier
- 23 La Ferrassie
- 24 La Quina
- 25 Neanderthal
- 26 Monte Circeo
- 27 Ngandong
- 28 Broken Hill
- 29 Florisbad

of the earlier stages of human development



Industrial Sites

- | | | |
|------------------|---------------------|--------------------|
| 1 Abbeville | 9 Soan river | 17 Victoria West |
| 2 St. Acheul | 10 Upper Burma | 18 Fauresmith |
| 3 Clacton | 11 Patjitan | 19 Angats Nanyokie |
| 4 Tagus estuary | 12 Kota Tampu | 20 Sango bay |
| 5 Stellenbosch | 13 Choukoutien | 21 Kalina |
| 6 Oldoway | 14 Lake Torralba | 22 Bir el-Ater |
| 7 Kafu river | 15 Levallois-Perret | 23 Bir es-S'Baikia |
| 8 Kamosa gravels | 16 Tayac | 24 Still Bay |
| | La Micoque | 25 Kharga oasis |
| | Le Moustier | 26 Oran |

stating it as ■ probability that, long before the opening of the Glacial Age, our earliest ancestors had wandered widely over the face of the earth, and had started to use crudely chipped flints for tools. A point to notice here is, that if man be defined as a tool-making animal, we must assume that the functional evolution of humanity long preceded its morphological evolution: in other words, there were creatures acting in a human way long before there were creatures of human build and features.

With the opening of the Palaeolithic Age we begin to tread on somewhat firmer ground, though in many places the apparent firmness may be deceptive; or, to vary the metaphor, we might say that there are a few points of light, which faintly illuminate the surrounding darkness. But let us have some precautionary observations to start with. The first is that the fossil human remains from the earlier stages of the Glacial Age are so scanty, and their preservation and discovery so hazardous, that, quite apart from the difficulties attaching to their anatomical and stratigraphical interpretation, they cannot be accepted as representative, and any general conclusion from them is liable to be completely upset by some new discovery. Secondly, in spite of the recent investigations carried out all over the world which have revolutionized the classical system of de Mortillet, huge tracts of territory still remain to be explored, and the fact that the great bulk of detailed palaeolithic knowledge and typology relates to western Europe gives any general picture of the Palaeolithic Age a western bias, which will be finally corrected only when the whole surface of the earth has been submitted to the same degree of detailed investigation. Only when that colossal task has been accomplished will all the facts be available for a definite account of the development and inter-relations of palaeolithic industries. Thirdly, with regard to the term 'palaeolithic' itself, let ■ note that it refers properly only to types of stone industry, and it is not to be inferred that the Eolithic, Palaeolithic and Neolithic Ages represent the three main stages of human advance to civilization. On the contrary the main biological advance from primeval to modern man took place within the Palaeolithic Age, when stone tools were made by chipping, while the Neolithic Age of polished stone tools mainly, if not entirely, followed and accompanied rather than preceded the development of agriculture and the discovery and use of metals.

The one specimen of fossil humanity indisputably dated to the

beginning of the Glacial Age is the jaw found at Mauern near Heidelberg in 1907 in association with a lower pleistocene fauna including *elephas antiquus*, *rhinoceros etruscus* and *machairodus*. In its massiveness and lack of chin it is more simian than human; but the arrangement of the teeth within the jaw is completely human, and the canines are no more developed than those of a civilized modern man; while in the size of their cavities the teeth rather resemble those of the primitive anthropoid *dryopithecus*. To quote Professor Macalister, the jaw 'might be loosely described as an ape's jaw fitted with human teeth'; and according to Boule it is intermediate in form between that of a dumb creature and one capable of speech.¹ Heidelberg Man is generally recognized as a probable ancestor of a widely spread human group or family of the mid-palaeolithic, the earliest members of which are represented by the fossil remains (to be described later) from Ehringsdorf and Steinheim in Weimar, and which may have given rise in turn to an important branch of modern humanity.

Far more enigmatic are the fossil remains disinterred from Piltdown in Sussex between the years 1912 and 1915; and the problem they present has been more sharply defined, rather than resolved, by the fluorine tests recently carried out under the direction of Dr. K. P. Oakley, which indicate that the remains date, not from the lower Pleistocene as was formerly supposed, but from the latter part of the middle, or even the beginning of the upper Pleistocene.² The skull indeed is, apart from its extreme thickness, of the type of modern *Homo Sapiens*, particularly in the absence of the heavy brow ridges common to primeval types of humanity: in volume it is on a level with the skulls of modern savages, and it is also non-primitive in being mesocephalic, moderately broad in relation to its length. But associated with this skull is a jaw-bone of thoroughly simian type with huge projecting canines, which, if it had been found alone, would probably have been attributed to a chimpanzee. The great disharmony between skull and jaw has led several authorities to deny that they belong together; but most English palaeontologists hold the opposite opinion, and the great French authority Marcellin Boule eventually concurred, on the grounds that it would be a coincidence beyond all bounds of probability that the skull of ■■■ creature and jaw of another should have been brought together and preserved in such close proximity: Oakley's fluorine tests also confirm the association in so far ■■■ they demonstrate that skull and jaw are of the same age. Some fragments of skull found

at Swanscombe in Kent in the years 1935-6 resemble the Piltdown specimen in their extreme thickness and otherwise modern formation. They were formerly regarded as posterior in time, but as a result of the application of the fluorine test they are now known to date from much earlier in the middle Pleistocene. Unfortunately, however, the fragments, being limited to the parietal and occipital bones, are too incomplete for any satisfactory comparison, and some authorities would associate them rather with the perhaps more or less contemporaneous Steinheim skull referred to above. All we can conclude is that there existed in Europe in middle Pleistocene times a type or race whose skull in certain respects was closer to the modern type than was that of the later and better-known precursor of *Homo Sapiens* in the same region.

Piltdown Man, then, remains an enigma about which disputes are likely to continue. There are, however, certain observations to be made about his status and significance. One is that the title of *Eoanthropus* (Dawn Man) given to him by Sir Arthur Smith Woodward, his discoverer, is a good deal less appropriate now that he is known to have existed at a comparatively late stage of the Pleistocene. If we accept the association of skull and jaw, as the evidence seems to require, then we must regard him rather as a late eccentric or regressive product of human evolution, possibly more simian in some respects than the earlier, but little known, Swanscombe Man. On the other hand he may be classed morphologically as 'eoanthropic' or 'primeval' on account of the extremely simian character of the jaw; and for this reason he is included in the present discussion. This leads on to the more general point that the stages of morphological evolution do not necessarily fall into a lineal series of uniform progression. Rather the evolution of mankind is to be envisaged as a variegated series of permutations and combinations, progressive or regressive in response to different types of favourable or unfavourable environment, sometimes leading to a dead end, and sometimes perhaps reaching the same result by different roads. According to Boule the Piltdown skull has African or Melanesian affinities,² and it is to be noted that the negro combines marked prognathism and a thick skull, which are primitive features, with absence of brow-ridges and often a bulging forehead, which is an advanced and infantile feature. Thus Piltdown Man might be regarded as a 'first sketch' of the negro, as the later Neanderthal Man of the Nordic. In any case the Piltdown remains seem to bear witness to the extreme variability of the human genus during its stages

of development. Nor are they unique in being anomalous, since Heidelberg, Piltdown, and as we shall now see, Trinil Man all present, in three quite different ways, an unexpected combination of human and simian traits. It is permissible to conjecture that further discoveries might lead to further surprises.

From the north-west extremity of the Old World we turn, then, to its south-eastern extremity, Java, where at Trinil in the nineties of last century the Dutch anthropologist Eugène Dubois discovered the skull-cap, thigh-bone and a tooth⁴ of a creature he named *Pithecanthropus erectus*, that is, upright Ape Man; because the thigh-bone indicated an upright posture, but the skull-cap with its low vault, flat forehead and heavy brow-ridges is almost as simian as it is human. The brain capacity has been estimated at from 850 to 950 c.c., as compared with the 450 c.c. of the gorilla and the 11,000 or over of modern mankind. This unexpected association of ape-like brain and human posture led some authorities to deny that skull-cap and thigh belonged to the same individual, and to hold that the skull was that of a species of giant gibbon. Since then further discoveries by Dubois and von Koenigswald have further substantiated the character of *Pithecanthropus* or Trinil Man, though differences of opinion still remain.⁵ Also at Modjokerto in Java the skull of an infant has been discovered, which owing to its relatively high vault gives the impression of being a good deal less ape-like than the Trinil specimens. But this may be an infantile character which would have disappeared in adult life. According to Boule the capacity of the adult skull would not have exceeded 900 c.c.

In the meantime excavations at Choukoutien near Peking have revealed a whole new series of fossil remains, including a number of skulls, facial bones, and some bones of the arm and leg. The estimated brain capacity of these Peking folk ranges between 850 and 1200 c.c., so that they bridge the gap between Trinil Man and modern *Homo Sapiens*. But though the brain capacity is generally larger, the teeth less ape-like, and the forehead more vaulted, it is considered by most anthropologists that the two groups belong to a single series or race, whose physical character includes a low, small, ape-like skull, with strongly developed brow and occipital ridges, wide, flat nose, high cheek bones and strongly projecting jaws. There is also pronounced sexual dimorphism, which, as noticed in the last chapter, is an anthropoid characteristic. In association with these remains have been found traces of hearths and tools of stone and bone, which, according to the famous

French savant the Abbé Breuil, exhibit several characteristics of the upper palaeolithic industries of the West. Now it is sufficiently astonishing that these lowly creatures should have been masters of fire and able to make tools; but that the tools they made should be comparable with those made by *Homo Sapiens* in the closing stages of the Glacial Age seems to make nonsense of some of our most fundamental ideas. To escape this difficulty the French anthropologist Professor H. V. Vallois has argued that the creatures of the Choukoutien caves were not hunters, but, like the other animals found there, the prey of other human hunters and tool-makers, pointing in support of his argument to the paucity of long bones among the remains, and to the fact that the skulls invariably show signs of having been smashed open, as though to extract the contents for food. But though it is generally agreed that these Peking men were eaten, the total absence of other, more fully human remains, is a fatal obstacle to such a theory.

The solution of the problem seems to depend primarily on the time relation between East and West. It was formerly supposed that the Trinil fossil dated from the Pliocene or the beginning of the Pleistocene, and the Peking fossils from the early Pleistocene; and while this dating was held to, it was equally difficult to explain the presence either of a relatively advanced industry or of human creatures, of whatever kind, capable of producing it. But recent investigations have greatly reduced the faunal ages of eastern Asia in comparison with the West, and it is now held that of all these fossils the Modjokerto one alone may doubtfully be assigned to the lower Pleistocene, while the rest are dated to a rather indeterminate middle Pleistocene. We may conclude, then, that these Chinese and Javanese fossils represent a species of primeval mankind which survived in eastern and south-eastern Asia long after the comparable types or species of the West had disappeared, or been transformed into more advanced types; and the evidence is, as we shall see in a later chapter, that this Oriental branch of mankind, following its own retarded course of evolution, eventually gave birth to certain existing races of man native to those regions. Furthermore, the association of these creatures of sub-human brain capacity with the use of fire and tools suggests that the mental development of humanity preceded its full anatomical development, and that the degree of mind cannot be accurately inferred from the shape and size of the skull. If the Trinil 'Ape Man' stands in respect of his brain capacity midway between ape and man, there existed at Choukoutien a woman

with no larger brain, who in her behaviour was already completely separated from the animal world by her inheritance of a social tradition. With Trinil Man himself no cultural remains were associated. That does not necessarily imply that he had no social tradition; but the geographical relation of Java to Peking does suggest that he may have been an eccentric offshoot from the main Oriental stem; and if, as some suppose, the earlier Modjokerto specimen is of more advanced type, Trinil Man (like Piltown Man) may have been not so much 'primitive' as retrograde or degenerate. One further point is that von Koenigswald discovered in Java in 1941 a jaw of sub-human form, extremely primitive and larger than any previously known, including the Heidelberg specimen; and this discovery may be linked with the finding in South China in 1934 and 1939 of some huge teeth of sub-human type. Thus it seems possible that, besides the Peking-Trinil race, there may have existed in East Asia in the early Glacial Age a race of sub-human giants, which we may presume became extinct because size was developed at the expense of brain capacity.

In Africa no fossil remains have been discovered which certainly date back to the early Pleistocene. The claims made by Dr. Leakey for the remains found at Kanam and Kanjera in East Africa have not been substantiated; and the Oldoway skeleton, earlier discovered by Dr. Hans Reck, is certainly post-glacial. Two specimens of primeval type, however, may belong to a somewhat vaguely defined middle Pleistocene, the fragments of skull cap found at Lake Eyassi in Tanganyika by Dr. Kohl-Larsen in 1935, and a jaw bone found at Rabat, Morocco in 1933. The former, on the basis of which has been erected a theoretical race named *Africanthropus*, is remarkable for the development of the frontal torus, flat vault and rearward position of the occipital orifice, involving a forward, ape-like carriage of the head, and the latter for the great size of the teeth: both recall the attributes of Peking Man. Thus, whether we suppose a genetic connection between the two groups or a parallel evolution in the two continents, we may assume that there existed in Africa in the mid-Pleistocene a very primitive type of mankind, resembling to some extent the Far Eastern group.

Man's earliest tools and weapons are likely to have been made of wood and bone and stone; but those of wood have left no trace, and those of bone only become important towards the close of the

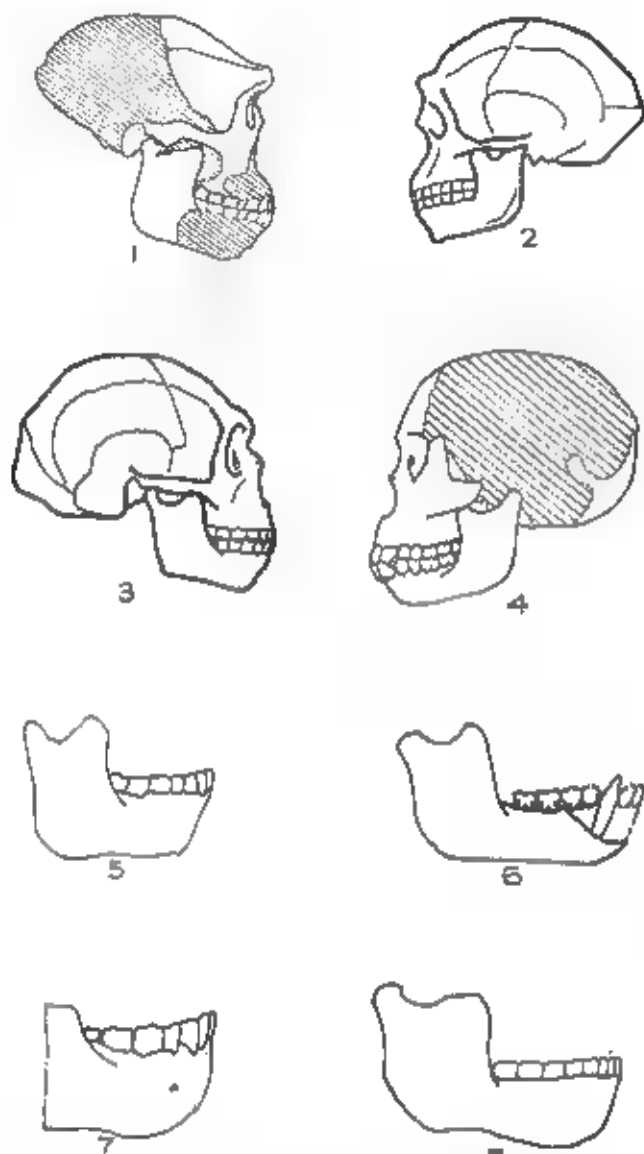


Fig. 1. Primeval skulls and jaws: (1) Trinil Man (*Pithecanthropus*), as restored by Wiedenreich; (2) Peking Man, as restored by Weidenreich; (3) Lake Eyasi Man, as restored by Weinert; (4) Piltdown Man, as restored by Smith Woodward; (5) one of the Peking jaws, after Weidenreich; (6) Piltdown jaw, after Smith Woodward; (7) fragment of gigantic jaw found in Java, after von Koenigswald, (photo, by Dr. van Bork Feltkamp); (8) Heidelberg Jaw. Skulls about $\frac{1}{2}$ scale, jaws $\frac{1}{3}$ scale.

Palaeolithic Age, partly because those made earlier have mostly perished or decayed beyond recognition, partly because they were made so roughly as to be indistinguishable into types and classes. Thus our knowledge of his earliest industrial traditions is limited to his use of stone, the most indestructable of materials, and one particularly requiring a deliberate technique for its successful working. Of the kinds of stone used flint lends itself most readily to the manufacture of tools of regular outline with a sharp edge; but in districts where flint was not available other forms of quartz or siliceous sandstone were used. Flint, and to some extent other siliceous stones, are elastic, so that when struck at a particular point the force of the blow is distributed down through a cone of percussion below the point of impact, and the compressed particles within the cone are split off from those not affected. Thus a blow delivered in the middle of a lump or nodule of flint will break away the surrounding surface and leave a cone, the apex of which is the point on which the blow was delivered.⁶ But if the blow is delivered towards the side of the lump, the outer edge will split off before the cone has time to form completely; and its beginning will show as a swelling, known as the 'bulb of percussion' at the top of the flake split off, with a corresponding hollow or 'negative bulb' on the side of the core from which it has been removed. According to the method and angle of striking flakes of various kinds will be removed, and only when a definite technique of knapping has been established can tools of a particular type be fashioned. The predetermined pattern exhibited by palaeolithic tools is proof of the existence among their makers of a cultural tradition.

To enlarge upon the technical details of flint-knapping would be altogether beyond my scope and capacity; but we need to note a few elementary points. The first is that there are three main ways of chipping or splitting stones, by the application of heat, by pressure, and by percussion or chipping; and the last of these methods is again divisible into three, which may be called the 'hammer', 'anvil' and 'hammer-and-anvil' methods respectively. If the anvil method is used, the stone is held in the hand and struck on another fixed stone; if the hammer method is used, the stone to be struck may be held in the other hand, or by the feet, or between strips of wood or fibre, or partly buried in the ground, and it will split in different ways according to the manner in which the stroke is thus cushioned; but if it is held on another stone, the hammer and anvil methods are combined in what is

called the 'bipolar technique', and two bulbs of percussion are produced instead of one. Again, the hammer may be either a stone, or a plain wooden punch or staff, or one armed with a stone or bone end; or the staff may be held on the stone and struck with a stone or wooden mallet. Similarly in the case of pressure-flaking, where a much flatter bulb of percussion is produced, the tool used may be either of stone or wood or bone; and in both chipping and pressure-flaking the effect will also vary according to the angle and direction of the stroke or push. A second point is the distinction between primary flaking which produces or shapes the tool, and the secondary flaking or trimming or *retouche*, as the French call it, which subsequently reduces surface irregularities, and refines or modifies the cutting edge. Trimming of this sort, often carried out by pressure-flaking or by the use of a bone or wooden hammer instead of a stone one, becomes steadily more delicate and elaborate with the advance of industrial skill. In the case of flake tools there was also usually some preparatory shaping of the parent block or core: in particular, since a flat surface is necessary on which to strike the blow detaching the flake, such a surface or striking platform was made, if it did not occur naturally, by knocking off one or more preliminary flakes at right angles to the direction in which the main blow was to be struck; and in more advanced industries the striking platform was carefully trimmed or faceted. A third point is that technique is always conditioned by the kind of material used, and the shape and condition in which it is found. In the chalk formations of Europe flint typically occurs either in roughly spherical lumps or pebbles, or in tabular form with more or less flat, parallel sides. But in most of Africa such material is not available, and instead of it quartz pebbles or lumps of rock were used; while in eastern Asia such relatively coarse and intractable materials are quartzite, limestone, silicified tuff and fossil wood were in common use. A knapper used to handling tabular lumps would naturally develop a different technique from one who never used anything but pebbles; and an industrial tradition associated with one kind of material would have to be, as it were, translated, if introduced into a region where only other kinds were available. The fact that successive occupants of the same site sometimes used different kinds of raw material suggests that the choice of it depended, not merely on what supplies were available, but on a preference associated with a particular industrial tradition.

Palaeolithic tools and industries are named and classified in various ways; and Dr. T. T. Paterson has recently stated that "at present the chief need is for a systematic terminology".* This uncertainty is partly due to the rapid development of palaeolithic archaeology all over the world in recent years; but it is also due in part to unresolved differences of outlook among leading archaeologists. Tools may be named and classified according to their shape, or the technique by which they are made, or the function they fulfil. Since the function for which they were intended is a matter of conjecture, this kind of nomenclature is liable to be misleading. Some of the tools, for instance, classed as scrapers, were certainly used for cutting rather than scraping; and the term 'hand-axe' is not adequately descriptive of a tool which probably had very various uses, and in its later forms was sometimes hafted. But such terms, as long as they are recognized as conventional, justify themselves by their convenience. In respect of their technique of manufacture they may be classified into pebble, core, flake (or, core-and-flake) and blade tools, according as they are made, (1) by simply removing a few flakes from a rounded stone or pebble so as to form a cutting edge, the size and shape being determined by the original material, which is usually a flattish oval, (2) by chipping a core or lump of stone till it is reduced to the required shape, (3) by striking a flake off it, or (4) by further battering one side of such a flake so as to turn it into a knife or blade, with a blunt back. There is also the classification into biface tools, worked on both sides, and uniface tools, worked on only one side: core tools are necessarily biface, but flake and pebble tools may be either biface and uniface.

Then there is the vexed question of the significance to be attached to the names of the 'type stations', which have been used from the first to denominate different kinds of industrial assemblages. Where similar assemblages are found in a number of stations in one geographical area it is natural to suppose that they were made by human groups sharing a single industrial tradition, and to call the type of industry they produced after the station where it is best represented. But with the more recent progress of archaeological discovery all over the world, these local names have also been given a world-wide extension, and the question arises whether we are dealing with a single tradition which has gradually in the course of centuries been carried from one continent to another, or with two separate traditions which display typological

convergence, and whether in the latter case there is any justification for using the local name. Dr. Paterson, for instance, places the Soan industry of north-west India in the 'Clacton family', with the express proviso that this does not imply any genetic relation between the two.¹⁰ On the other hand, Mr. M. C. Burkitt has condemned as 'unscientific' the use of the term 'Clactonian' for distant Asiatic or African industries, in which the same simple technique may be found as in the Clacton assemblage.¹¹ Nomenclature is largely a matter of usage and convenience; but it also expresses to some extent a particular point of view. The question at issue is between a purely typological or 'scientific' classification, and one in terms of the most likely cultural relations of different industrial stations and levels and traditions to each other in time and space. From the historical point of view (which is the view adopted in this book) no classification can be fully adequate which imposes a formal or abstract scheme on a context which is in its essence complex and various and unique. In other words typology is a means to an end, not an end in itself: the end is the bringing of the prehistoric ages of man's past into a scheme of events and relations in time and space as nearly historical as possible; and in that case it is more logical to retain for local names a local significance in time and place, while using for purely typological classifications conventionally descriptive terms, as is done, for instance, with the numerous types of gravers used in upper palaeolithic assemblages.¹²

In Europe two main early palaeolithic industrial traditions have been distinguished, which may be called the hand-axe, and the flake or core-and-flake, respectively.¹³ The former of these is the 'classical' tradition of de Mortillet, the stages of which have been named Abbevillian (previously Chellean) and Acheulian, after the French stations of Abbeville (previously Chelles) and St. Acheul in the Somme: its typical tool is the hand-axe or *coup-de-poing*, made by chipping a more or less rounded knob of flint so as to sharpen one end of it to a point. In the earliest stages the chipping is so rough and haphazard as to suggest that the workman was hardly aware of what he was about, beyond trying to produce some sort of sharp, cutting edge. Later the tools are more regularly shaped; the flint nodule is chipped all over instead of being left partly in the rough; and different varieties are invented for specialized purposes, some being fitted with a straight or rounded cutting edge, others with a sharp point. A further great improvement was the introduction of a

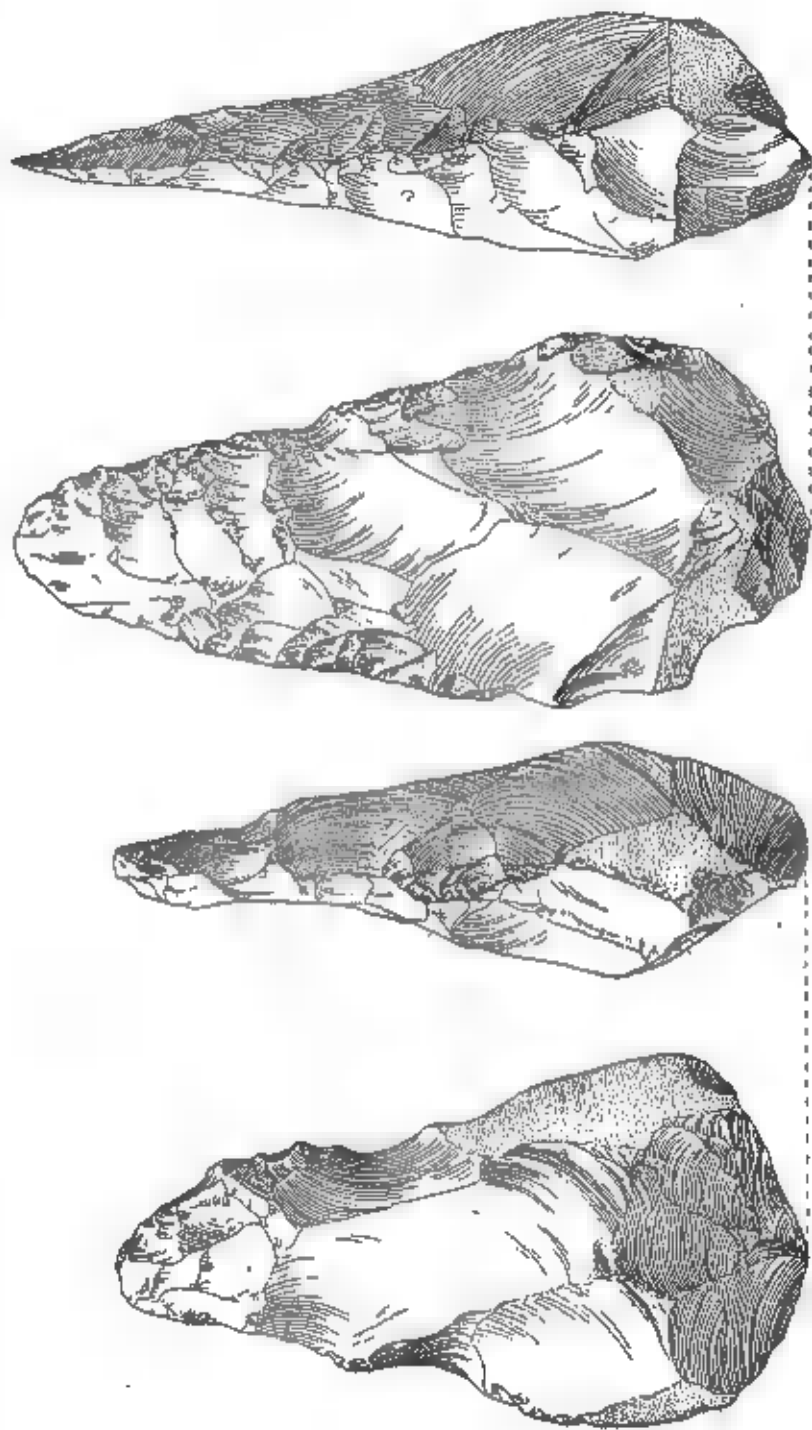


Fig. 2. Abbbevillian (1) and Acheulian (2) hand-axes, after Leakey. $\frac{1}{4}$ scale

new technique of trimming or secondary flaking. By the use of a bar of wood or bone, instead of a flint hammer, the mechanical force of the blow was distributed along a shallow curve instead of radially from a central point, and a series of flat flakes could be struck off along a line. In this way an almost straight edge could be produced. Many late Acheulian tools were quite thin, being made from large flakes instead of cores, and had their edges gracefully curved in screw fashion; and there was also a type with a cutting edge all, or nearly all the way round. The purpose of this elaborately symmetrical trimming is somewhat mysterious, and it seems hardly possible that it was strictly practical.

The hand-axe is the typical, but not the only tool of the industries belonging to the Abbevillian-Acheulian tradition. The flakes which were chipped off in shaping the hand-axe were also used, with or without further trimming, for boring, cutting and scraping; and small flake tools of this kind are found on most early palaeolithic sites. But industries belonging to the core-and-flake tradition, which are found, sometimes separately, sometimes in combination with those of the hand-axe tradition, are distinguished by the presence of cores which are not tools but the left-over material from which flake tools have been struck; and as the form of the core varies according to the technique used in striking off the flakes, the cores provide the chief evidence for tracing the development and varieties of the tradition. Industries of this type in England and northern France are called Clactonian after their English type-station, with a rudimentary Ipswichian¹⁴ or pre-Clactonian stage corresponding with the Abbevillian of the hand-axe tradition. According to Burkitt and Breuil the Clactonian flake was struck off by a swinging blow of the core against a stone anvil. In the rudimentary stage, after the removal of a preliminary flake to provide a striking-platform, a number of flake tools were struck off more or less at random; but in the typical Clactonian after the detachment of the first tool, the core was twice rotated through a right-angle, the scar of the earlier flake thus providing the striking-platform for detaching a second and third; or several flakes were struck off side by side in opposite directions, the vertical rotation through a right-angle being alternated with a lateral rotation. In later stages several changes and advances of technique were introduced, in particular a more careful preliminary preparation of the core, a gradual change in the direction of the main blow from a wide angle to one almost perpendicular to the striking-platform, and, as in the later stages

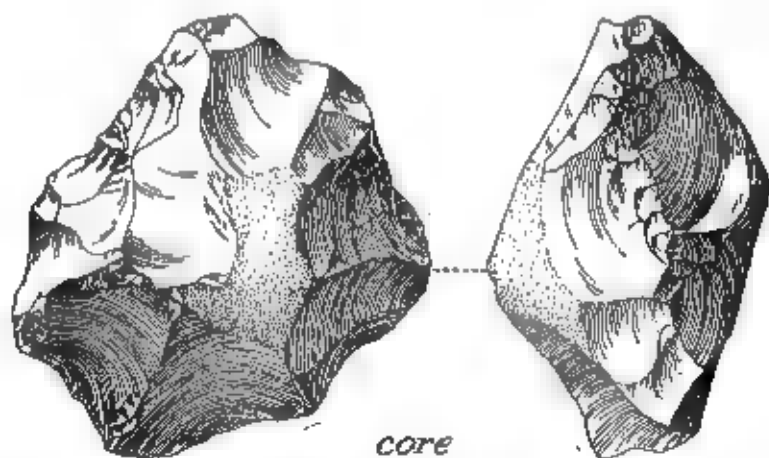
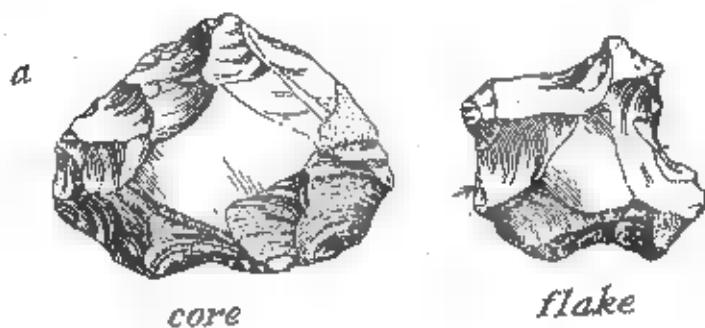


Fig. 3. Clactonian cores and flakes, after Paterson: (a) 'prototortoise', where flakes were struck off on same side all round; (b) 'biconical', where flakes were struck off alternatively from opposite sides. $\frac{1}{2}$ scale

of the hand-axe tradition, the use of fine trimming with a wooden tool.

Breuil has shown that in England and northern France the hand-axe industries belonged to an interglacial, and the flake industries to a glacial period: east of the Rhine the earliest known tools belong to the flake tradition; while in the Soan river area of the northern Punjab an early ('pre-Soan') industry of large crude flakes has been found, which seems to be unrelated to those which follow, and to have affinities with the Clactonian of the West. The conclusion has been drawn that the Clactonian tradition is of northern origin, and belongs to an early boreal culture-province, while the hand-axe tradition is of southern origin; and it has been further suggested that Heidelberg Man was responsible for the flake industry, and the morphologically very different Piltdown Man for the hand-axe industry, the association of the Swanscombe fossil with Acheulian tools being taken as proof that the authors of the hand-axe tradition were an early type of *Homo Sapiens*. But as the status of both the Swanscombe and Piltdown fossils is highly dubious, this particular piece of evidence is quite inconclusive; and in general it may be said that we know far too little about early pleistocene man to be able to classify him into races, and that, where we have much fuller knowledge of both races and cultures, we find ■ necessary correspondence between racial distribution and cultural provinces. Moreover recent discoveries in Africa have placed the relationship between the two European traditions in a new perspective. But before turning to that region we may note that on ancient Portuguese beaches, lying north and south of the Tagus estuary, industries have been discovered, in which tools of the 'classical' Abbervillian-Acheulian type are associated with a much larger number of pebble tools, of various types at different periods but always of very simple technique; and this series apparently goes back to the very beginning of the Glacial Age. According to Breuil and his collaborators this primitive type of industry, prolonged through every stage of the Pleistocene, was the work of a shore-dwelling folk who got their living by gathering molluscs instead of by the chase; and their manner of life did not require any ingenuity in tool-making.¹¹

Throughout the length of Africa industries of the hand-axe type of family have been identified. In South Africa they have a distinct regional form, named Stellenbosch after the type-station near Cape Town: elsewhere, in East, Central and North Africa and Egypt, they are denominated by their European type-names.

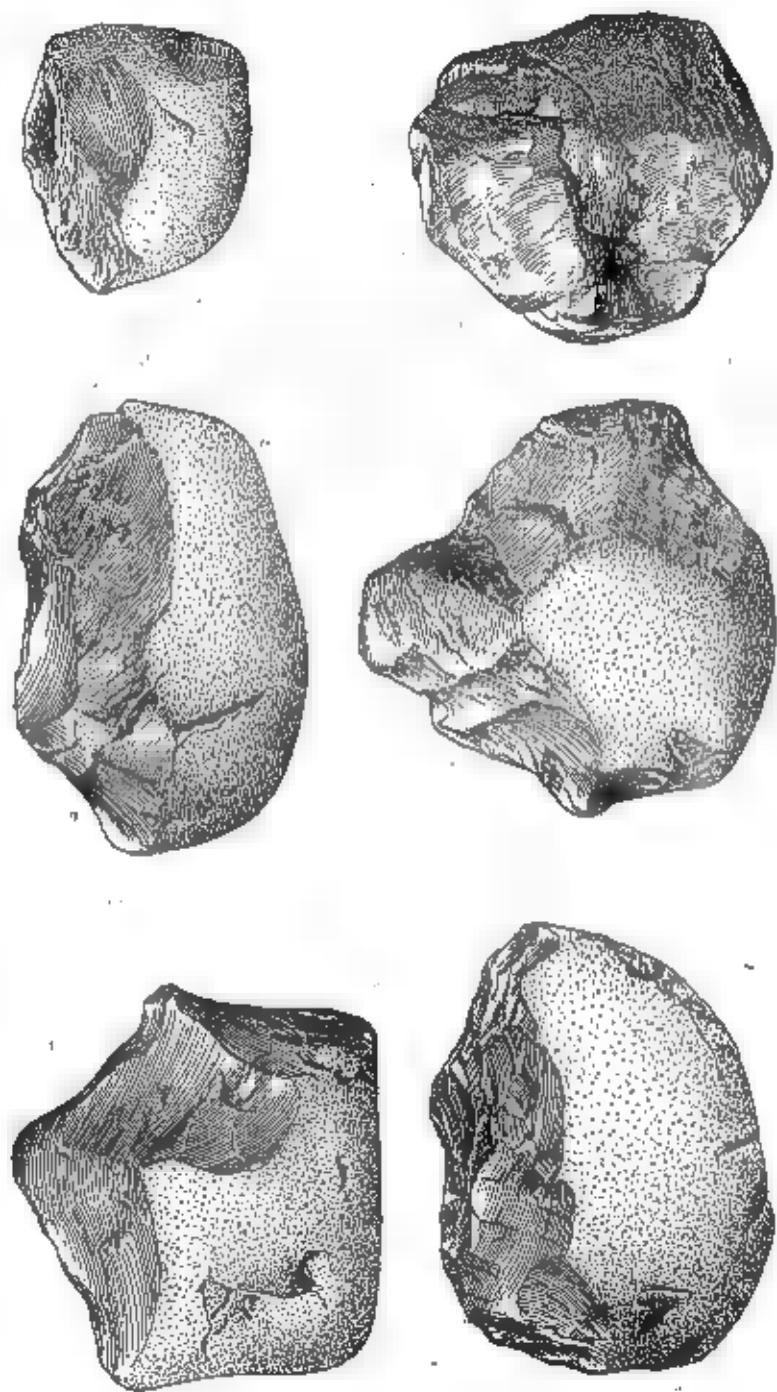


Fig. 4. Early Kafuan pebble tools from Uganda, after O'Brien. $\frac{1}{2}$ scale

These African industries, however, have three characteristics which distinguish them from the European. The first of these is that many of them, and particularly the Stellenbosch, include a high proportion of 'cleavers' or 'choppers', a type of biface tool with a straight terminal working edge produced by the intersection of two large flake surfaces, which is rarely or doubtfully found in Europe. Secondly, in several regions of Africa the earliest assemblages consist of simple pebble tools: such are the pre-Stellenbosch of South Africa, the early Oldowan of East Africa (so named from Oldoway in Tanganyika), the Kafuan of Uganda (named from the river Kafu, a tributary of the Victoria Nile), and the recently discovered tools from the southern border hills of the Belgian Congo. Thirdly, very early industries on the coast of Morocco, near the head-waters of the Congo river (Kamoa gravels), and in South Africa (Stellenbosch I) display a combination of the hand-axe and core-and-flake traditions, many of the tools consisting of large flakes struck off in the Clactonian style and then worked into roughly-shaped hand-axes; and this close association of what in Europe are two distinct industrial traditions is continued in the later, Acheulian stages of the hand-axe industries of Uganda, East Africa, the Belgian Congo, Rhodesia and South Africa.¹⁶

According to present knowledge Asia in palaeolithic times was divided into two main cultural provinces, of Hither Asia stretching from the Levant coast and borders of Africa and Europe to the Punjab and southern India, and of the Far East stretching from the northern Punjab to northern China and Malaya. The industries of Hither Asia belong to the same great hand-axe family or tradition as those of Europe and Africa, but are closer to the African than to the European series. In particular the tools from the Madras Presidency show a kinship with the African in the combination of cleavers with hand-axes, and of ■ Clactonian technique with Acheulian forms. The other far eastern province is represented by stations on the Soan river in north-west India, in Upper Burma, at Choukoutien in northern China, near Patjitan in Java, and on the Kota Tampan rubber estate in northern Malaya, where excavations have revealed ■ series of industries which have a generic likeness and cannot be classified under the terms of western typology.¹⁷ Both core and flake tools occur, while many are made on flat, oval-shaped pebbles. The characteristic tool is a chopper or chopping-tool with a thick, steeply-cut edge, either curved or straight, or occasionally pointed. Charac-

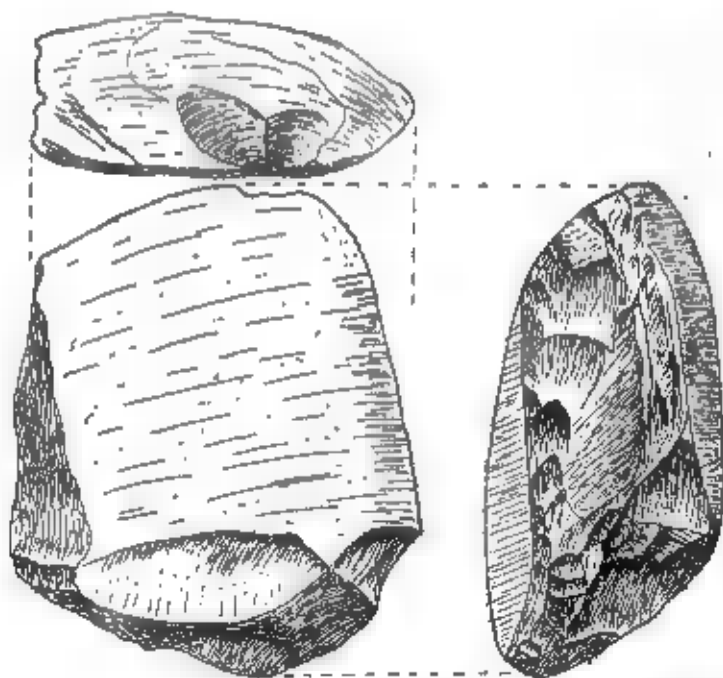
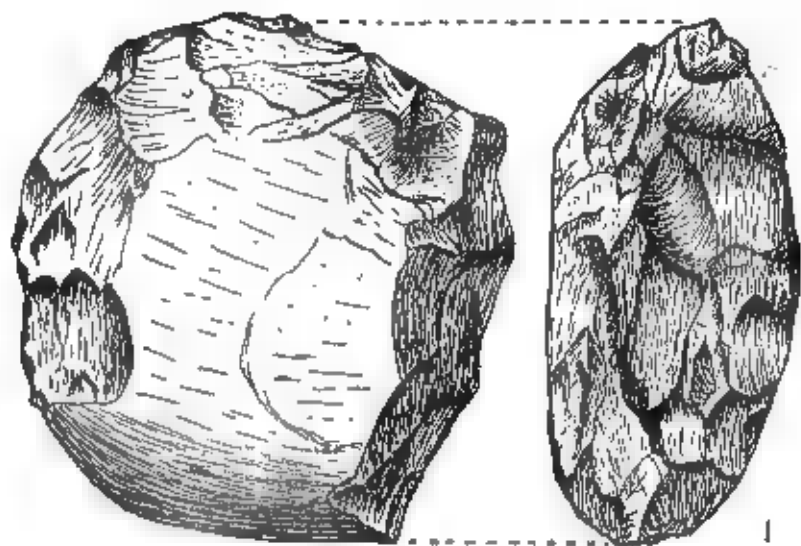


Fig. 5. Tools from Choukoutien, after Movius: (1) chopper worked on three sides; (2) chopping-tool worked on sandstone pebble, with alternate flaking to produce zigzag edge. $\frac{1}{4}$ scale

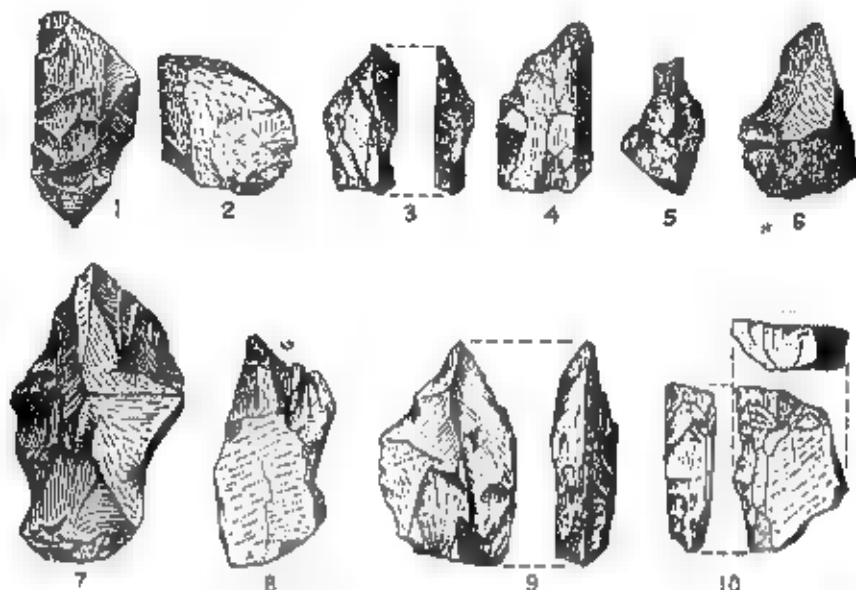


Fig. 6. Flake tools from Choukoutien, after Movius: (1-6) scrapers, crudely worked along one, or occasionally two edges; (7-9) pointed tools; (10) beak-shaped tool. $\frac{1}{4}$ scale

teristic also is the use of the bipolar technique, at Choukoutien, and of alternate flaking from opposite sides to produce a wavy or scalloped cutting edge. The general crudity of the tools is due in part to the material used, which in India was quartzite, in Burma fossil wood, silicified tuff and occasionally quartzite, at Choukoutien sandstone, quartz, chert and rarely flint or quartzite, and in Java silicified tuff or limestone. Fossil wood in particular can hardly be worked except along the grain or line of growth. Yet when allowance has been made for the intractability of the material, it remains that these industries stand apart from those of most other regions of the Old World, in respect both of their characteristic forms and techniques and of their lateness and lack of development over a long stretch of time, extending in north China to the very end of the Glacial Age. This separateness is emphasized by the presence, alongside the Soan industry of north-west India, of a hand-axe industry which develops along its own lines without appearing to influence its neighbour, as well as by the presence of the already mentioned pre-Soan industry of large crude flakes with a high striking angle, which also seems unconnected with its successors. Yet Movius (from whose account these

particulars are derived) probably exaggerates the complete independence of the eastern and western traditions; for many of the African pebble tools and cleavers closely resemble the Soan types of India, while the Patjitan industry of Java includes undeniable hand-axes, which have a close resemblance to a stage of the Stellenbosch of South Africa; and Movius' argument that if they had been derived from the hand-axe industry of southern India, they would have been found also in Upper Burma, is not altogether convincing.¹⁸

In considering the relations between the several cultural provinces and industrial traditions of the three continents we have to bear in mind that a 'primitive' industry or technique is not necessarily earlier than a more advanced one, and that the time-relation between one industry and another can be determined only on geological and palaeontological grounds. Movius has suggested the possibility that a pebble chopping-tool industry may have preceded the rise and spread of the hand-axe tradition, which later replaced it, except in East Asia, and in some isolated regions elsewhere. But if, as seems most likely, the flake and hand-axe industries of Europe and Africa go back to the beginning of the Glacial Age, and the chopper-tool industries of the Far East only to the middle of it, the latter can hardly be more primitive in a temporal sense; and their general character suggests rather a late degenerate adaptation of western techniques.¹⁹ A second point is that these Far Eastern tool makers, as represented at least by Peking Man, were greatly inferior in mental capacity to their probable mid-pleistocene contemporaries in the West; so much that their ability to make tools of any sort has been called in question. The conclusion seems to be that the Far East was an area peripheral to the main centres of cultural advance in palaeolithic as in historic times, and that the chopping-tool industries may have resulted from an adaptation of early western techniques by populations of different racial origins and more primitive mentality, the relationship being fundamentally of the same kind as that subsisting between the historic Chinese civilization and its Middle-Eastern prototype. What in any case is reasonably certain is that there was spread over eastern Asia a distinct type of primitive stone industry, which originated much later than the lower palaeolithic industries of the West, and lasted on with comparatively little change to the end of the Glacial Age; and this industrial tradition is associated in one case with a distinct race or species of mankind.

The early relationship between Europe, Africa and Hither Asia is more problematical. It has been claimed, on geological grounds, that the pebble industries of Uganda and the Congo date from the beginning of the Pleistocene, or even earlier; and in that case they would be in the fullest sense the most primitive known, and Central Africa would qualify as a probable home of man's earliest industrial efforts. On the other hand the persistence of relatively crude industries in these regions, such as the Oldowan and later Kafuan, as well as the pebble industry of the Portuguese beaches, suggest that Africa south of the Sahara became at a very early period, what it has remained ever since, a secondary or peripheral area of human culture, and that the centre of this most primitive industrial area may have lain, not in Central Africa, but in the vast stretch of now desert country lying to the north of it. This assumption would seem to draw some support from the already mentioned discovery by R. Neuville and A. Ruhlman of 'Clactonian' flakes worked into hand-axes on a Sicilian beach on the coast of Morocco, since they indicate the presence on the western edge of this central Saharan area at an extremely early date of a culture in which the hand-axe and flake-and-core traditions were already combined. The general uniformity of design and technique of the hand-axe industries in a great number of stations scattered over all three continents is generally accepted as evidence of their all belonging to a single tradition, the original home of which would most naturally be placed somewhere in the central desert area stretching from Morocco to India; and if we take into account the vast stretch of time involved, during which this area passed through several climatic revolutions, from relatively cool and moist to hot and parched conditions, and back again, we may readily suppose that there would have been a corresponding alternation of human movement from the centre outwards and back again, and that this would have led to the radiation out of successive technical advances from one or more originative centres. Possibly, then, the earliest pebble industries of Central Africa represent, like perhaps some of the better authenticated 'eoliths' of north-west Europe, a pre-Abbevillian stage of the hand-axe tradition, traces of which within the central desert area are still to be found, or else a secondary adaptation, like the later Far Eastern series, of the earliest phase of the hand-axe tradition; or alternatively, Central Africa may have been the original home of human industry. The relationship between the hand-axe and core-and-flake traditions is equally uncertain.

Possibly both originated, separately or together, in the central region. If indeed there were originally two distinct culture provinces, they must have largely interpenetrated one another in the very earliest stages. Or it may be that the Clactonian technique was invented independently at several times and places.

Amid much that remains uncertain we may conclude that the whole vast area of Europe, Africa and Hither Asia formed from the dawn of humanity a cultural continuum, throughout which the wandering of human groups gradually transmitted through countless centuries a number of technical traditions, of different local origin; and these traditions assumed separate local and regional forms in response to the different climatic and economic environments of the users, or to the 'accident' of particular events and masteries of which we must remain inevitably ignorant. Thus it may well be that the cleaver or chopper was used for felling trees, and that its absence or scarcity in European assemblages was due to the absence of forests there, even in the interglacial periods; and it is possible that flake tools were in some way more suitable to boreal conditions than tools of the hand-axe type. But it does not follow that all local and regional differences are explicable in geographic — economic terms—for instance, the preference in England, during the later Acheulian stages, for more pointed forms of hand-axe, and for more oval shapes on the Continent.¹⁰ We may conclude also that the main technical advances were most probably made in the central area of North Africa and Hither Asia, and that Africa south of the Sahara quite early became, like the Far East, a peripheral area; and this conclusion is supported by the palaeontological evidence that in Africa as in eastern Asia primitive or backward types of mankind survived into late stages of the Glacial Age.

It is by his stone industries that primeval man is chiefly known to us. But how far can we deduce from them, and from his other material relics, his culture and way of life? The purpose and use of many of these early tools are, it must be confessed, highly dubious. It has been supposed that the hand-axe people used their main tool for digging up the roots and grubs which provided their source of diet, while the 'Clactonians' were a forest people who used their flake tools with strong cutting edges for working wood.¹¹ This is a highly disputable thesis; but at least it is probable that the hand-axe was originally used for

digging: perhaps, like similar tools used by modern savages, the butt was covered with a padding of fibre. At a station on the shores of an ancient lake at Torralba in Spain, however, early Acheulian hand-axes are found in association with the bones of elephant, rhinoceros, deer and horse; so evidently at this stage some hand-axe users lived partly, if not mainly, by hunting. The cave-dwellers at Choukoutien were also great hunters, whose prey included early types of bison, musk-ox, gazelle, horse, wild boar, leopard, tiger, hyena, bear, rhinoceros and elephant; and besides all these other animals they ate their own kind. We may conclude that the art and business of hunting were already well developed in the early palaeolithic age, though there were probably other human groups, dwelling in tropical forests or other regions unsuitable to hunting, who lived mainly or entirely on vegetables and grubs, or, as on the beaches near the mouth of the Tagus, on shell fish. Apes in their natural state are vegetarian, though in captivity they readily become omnivorous; and it has been said that the teeth of early human kinds are generally more adapted to a vegetarian than a carnivorous diet. That these earliest known humans had become hunters and meat-eaters, is evidence of how far they had already separated from the non-human primate stock, and of the triumph of culture over nature. It may well be that the change over from food-gathering to hunting was the crucial step of advance from a merely animal to human existence; though in this dim shadow-land of human origins it is impossible to envisage the sequence of causes and effects.

It is reasonably certain that the earliest hunters had not acquired the art of hasting (though it is difficult to ■ how some of the shapes they made were adapted to the hand), and that their stone artifacts were tools rather than weapons; but it is possible that the long, narrow type of Acheulian hand-axe was used as ■ dagger to pierce the neck artery of the prey. Their weapons were probably wooden clubs and spears pointed and hardened in the fire. Some animals they may have hunted in the manner the ancient Red Indians hunted the bison, cutting out the young or enfeebled animals from the herd and then falling on them in a combined attack; but the larger and more dangerous they would have caught by trapping them in concealed pits, ■ many savage tribes do in modern times. Their stone tools would have been used for sawing, cutting and scraping wood, for cutting up dead animals and cutting off and scraping the hides, for boring holes, and perhaps

for extracting marrow from bones. Bones and horns and antlers they probably used, ■ at Choukoutien, for digging and piercing and splitting, but without any deliberate care in shaping and adapting them; and Dr. Oswald Menghin's hypothesis of an original 'bone-culture' province, lying north of the 'flake-culture' province of the Eurasiatic plain, has little to recommend it. Wherever wild animals were hunted and their carcasses cut up for food, the whole or split bones can hardly fail to have been put to some temporary use, though the very abundance of the material, and its brittleness, would have discouraged an elaborate working of it; and on the other hand we have no evidence of any primeval group or section of humanity that hunted animals but had no knowledge of stone tools. Besides clubs and spears the principal wooden tool was probably the digging-stick, a long pole with a chisel-like end, such ■ would be required for digging out the pits in which wild animals were trapped; and they would also have been used by the females for digging up edible roots and tubers, as they are used by the Australian women at the present time.

The occurrence of scrapers among early palaeolithic tools indicates that the skins of animals were made use of, though it is improbable that they were worn as clothing. Scrapers are a generally recognizable type of tool with ■ slightly convex working edge, and were used, ■ are similar implements by modern savages, to remove the inner layer of fat from the skin and make it soft and supple. Skins were probably the earliest kinds of pots or vessels for holding water and cooking; and they may also have been used to make shelters or wind-breaks. Another type of scraper was for shaping and smoothing the shaft of spears and digging-sticks. Peking Man, as we have seen, dwelt in caves; but that was probably only during the cold season, and in Europe early palaeolithic stations were ■ the banks of rivers or on the open plateau. Man, originally ■ animal of the temperate or sub-tropical zone, had probably not yet adapted himself, physically or culturally, to the rigours of a northern climate. Among the fauna of the Choukoutien caves we find such warmth-loving species ■ *elephas namadicus* and *rhinoceros merckii*, so that the climate in winter can hardly have been as severe ■ it is at present; and the fact that the flake-using people in north-western Europe lived, like the hand-axe people, in open stations, suggests that 'glacial conditions' here also were a good deal milder than they were later, during the extremes of the Würm glaciation. The apparent absence of

early palaeolithic stations from Russia and Siberia is also suggestive of primeval man's intolerance of cold.

Language and the use of tools and fire may be taken ■ the specific attributes of humanity. The possession of rudimentary language by the early palaeolithic hunters may be inferred both from the skull-shapes of some early fossil types,²¹ and from their mode of life, implying the existence of a cultural tradition. Fire as well as tools we know was possessed by lowly Peking Man, and so probably by the earlier but more advanced communities of the Near East and Europe. But as the first fire must have been kindled by a chance friction or striking of sparks, its artificial production would have long remained a very chancy and haphazard affair. How deeply enracinated were the anxieties attending this uncertainty is indicated by the custom preserved down to a comparatively late historic time of keeping a fire perpetually burning, the extinction of which was regarded as a major public calamity: here may well have been one of the earliest occasions for magical practice and belief. Its primary use would have been to provide protection against wild beasts and against the cold. Thus the hearth or fireside is likely to have been from the first, what it has remained ever since, the basis and centre of family life, whatever the earliest type of family may have been; and tending the fire by day and night ■ that it never went out the immemorial task of the females. But fire was also used from the earliest times for cooking, since 'pot-boilers' have been found in early palaeolithic sites. Similar stones are used by modern Eskimoes. They are heated in the fire and then dropped in ■ pot of water containing the raw flesh; and this is continued until the meat is considered to be cooked. Probably the flesh was also sometimes roasted by being put in a pit and covered with red-hot ashes, in the way still practised by the Australian natives. But we may suppose that when hunger urged, and the means of cooking were absent, these earliest hunters tore and devoured the raw flesh after the manner of animals.

Alongside these three formative elements of culture must be placed the development of the hunting life itself, with its need for social organization, division of economic functions, and training of the young. The primeval hunter, armed with his stone dagger or wooden spear, could destroy his far more powerful savage prey only by his human capacity for co-operation. The earliest human groups probably did not exceed a score or so of individuals, containing not more than half a dozen adult males, whose dangerous

and splendid task it was to go out in search of prey and bring back the dead booty for the common feast, while the females stayed behind to look after the young, tend the fires, and like their simian forebears, gather roots and vegetables for food. Perhaps the marked physical and mental inferiority of women, which seems to have persisted throughout the Glacial Age, was a consequence of this development of the hunting economy, which required of the male partner so much larger an endowment of strength and will and cunning. But the life of the group also required of him the restraint of his sexual appetites, a sharing of food with the weaker, and a willingness to protect and train the rising generation. In fine the group as a whole could survive and function only as a social unit, closely bound together by traditional ties of social behaviour.

It has been seen that the early dwellers in the Choukoutien caves were cannibals. In this respect, in their use of fire and tools, they are shown to be fully human; for cannibalism is essentially human custom, and is found in use at every stage of human history, outside the borders of civilization. It may occur sporadically through severe necessity and lack of other food; but where the practice is fully established, it is generally, if not always, a religious rite and recognized social institution; and it has been observed that the African tribes most addicted to it excel in mental qualities and physical energy. Modern barbarians often ate their enemies slain in battle in order to acquire their strength and courage; but it is impossible that warfare of this sort existed among these primeval savages. It is more likely that they ate their dead. The custom is attributed to the ancient Wends of killing and eating their aged parents and relatives, and Sir James Frazer suggests it may have been common at one time to the whole Aryan stock: it is also reported from Kurdistan, Central Africa and Polynesia. It is associated with the same magico-religious idea of assimilating the life or *mana* of the dead. Malinowski writes of the custom among the Melanesians of New Guinea "of partaking in piety of the flesh of the dead person. It is done with extreme repugnance and dread and usually followed by a violent vomiting fit. At the same time it is felt to be a supreme act of reverence, love and devotion."¹⁸ While we cannot attribute such delicate feelings to the lowly inhabitants of the Choukoutien caves, the fact that they took such trouble to extract the brain from the skull is perhaps evidence of something more than a special taste for that sort of food. Though we cannot definitely

attribute magico-religious practices to them, the possibility is suggested that such practices may go back to the very dawn of human mind, or even into the darkness before the dawn.

NOTES

¹ R. A. S. Macalister, *A Text-Book of European Archaeology*, Vol. I (1921), p. 194. M. Boule, *Les Hommes fossiles*, 3e. edn. par H. V. Vallois (1946), p. 169.

² See Kenneth P. Oakley and C. Randall Hoskins, *New Evidence on the Antiquity of Piltdown Man* in *Nature* for March 11th, 1950 (Vol. 165, No. 4193). The fluorine test is based on the fact that buried bone accumulates fluorine in course of time, so that its fluorine-content increases with its geological age. The test is not applicable to isolated bones, owing to the many variables involved, but is particularly suitable to cases, such as that of the Piltdown remains, where there is a large assembly of human and other bones, and the relative fluorine-contents may be statistically compared.

³ *Op cit.*, p. 179.

⁴ Or 'teeth'. Three were found; but two of them doubtfully belong to *Pithecanthropus*.

⁵ Weidenreich is still sceptical of the connection between skull and thigh bones (See *Nature*, Vol. 141 (1938), pp. 615-616), and so is Professor Arambourg, who in his recent book *La Genèse de l'Humanité* (1948), p. 86, points out that the thigh bones are quite different from those of Peking Man, and that the closeness of the layers in which they were found to those containing the much more advanced Ngandong Man may well have allowed their transference, through some local alteration of the soil, from the later to the earlier bed. Dubois on the other hand, while agreeing that skull and thigh bone belong together, still holds that the creature was a kind of gibbon, and rejects the opinion of most anthropologists that *Pithecanthropus* and *Sinanthropus* are closely related. See *Early Man*, ed. by G. G. MacCurdy (1937), pp. 315 *et seq.*

⁶ More accurately, the result is a double cone, a small 'nipple' with an angle of about 110°, with a longer truncated cone below with an angle of about 30°.

⁷ English archaeologists regularly use the word 'retouch', adapted from the French *retouche*. It is evidence of my technological innocence that I am unable to understand the need for this neologism, when the perfectly good English word 'trimming' is available.

⁸ The tool makers on the banks of the Vaal river in South Africa used dolerite, an extremely hard volcanic rock found in the alluvial soil brought down by the river. It is so hard that it can scarcely be split by hand, and Breuil has suggested that those who worked it used a heavy block suspended from a large wooden tripod, which they lifted

and then released, so that it swung down on to a suitably placed lump, which it smashed by the mechanical force of the blow.

⁹ *Proceedings of the Prehistoric Society* (subsequently cited under the initials P.P.S.), Vol. XIII (1947), p. 187.

¹⁰ *Loc. cit.*, where he argues that it is justifiable to class these two industries together 'in a first broad grouping' as it is to class the Australian and Eskimo cultures together in the hunting and food-gathering class. But surely the parallel would hold only if we classed the Australian and Eskimo cultures together under some local name, and called them, for instance, 'Thule cultures'—which, of course, nobody would think of doing. Dr. Paterson's views on classification are to be found in his articles, *On a World Correlation of the Pleistocene in Transactions of the Royal Society of Edinburgh*, Vol. XL, Part II (1942), pp. 373-426, and *Core, Culture and Complex in the Old Stone Age in P.P.S.*, Vol. XI (1945), pp. 1-19. My remarks on the Clactonian technique are mainly taken from the latter article.

¹¹ M. C. Burkitt, *The Complexity of Prehistoric Cultures in Scientia*, Vol. LXIII (1938), pp. 219-221. Cf. also T. P. O'Brien, *The Prehistory of the Uganda Protectorate* (1939), p. 51, and J. de Morgan, *La Préhistoire Orientale* (1925-27), Vol. II, p. 384.

¹² Perhaps the distinction between a cultural or historical and a purely typological relation may be made clear by the use of the terms 'industry', 'tradition' and 'technique', to denote respectively (a) a close geographical and cultural connection, (b) a much looser and wider cultural continuum, (c) a typological similarity with no implication of any cultural connection at all; and this is the usage I have myself adhered to, as far as possible.

■ There may be some danger of confusing between a 'core' and a 'core-and-flake' industry. The point is that the criterion for distinguishing a 'flake' from a 'core' (or hand-axe) industry is not the presence of flakes, which are usually found accompanying hand-axes: it is the presence of cores which are not tools but the remnants of material from which tools have been made. Hence 'core-and-flake' is a more accurate title for such industries.

¹³ This term is used in Breuil's foundational article, *Le Paléolithique ancien en Europe Occidentale et sa Chronologie* in the *Bulletin de la Société Préhistorique Française*, Vol. XXIX (1932), pp. 571-574. It refers to the rough flakes found in and beneath the Ipswich red crag formation, which is dated to the beginning of the Pleistocene, or even earlier. It is doubtful, however, whether these crude Ipswichian, or Cromerian, flakes are ancestral to the Clactonian technique in the way that the Abbevillian undoubtedly is to the Acheulian.

■ L'abbé H. Breuil, Maxime Vaultier, et George Zbyszewski, *Les plages anciennes portugaises entre Caps d'Espichel et Carvoeiro et leur industries paléolithiques* in P.P.S., Vol. VIII (1942), pp. 21-25.

¹⁴ H. Breuil, *Le Paléolithique du Congo Belge d'après les recherches du docteur Cabu*, and G. van Riet Lowe, *Notes on Dr. Francis Cabu's Collection*

of Stone Implements from the Belgian Congo, in *Transactions of the Royal Society of South Africa*, Vol. XXX (1945), pp. 143-160 and 169-174. H. Breuil, *The Pleistocene Raised Beaches on the West Coast of Morocco*, in *Nature*, Vol. 149 (1942), pp. 77-78.

²⁷ H. J. Movius Jr., *Early Man and Pleistocene Stratigraphy in Southern and Eastern Asia* (1944). Dr. Paterson's dissent from what I take to be the general acceptance of the conclusions reached by Dr. Movius has been already noticed.

■ *Op. cit.*, p. 92.

■ Such is certainly the character of the post-glacial Baconian and Hoabinhian industries of south-eastern Asia in relation to the contemporary mesolithic or neolithic of the West.

²⁸ See T. T. Paterson in *P.P.S.*, Vol. XI (1945), p. 8.

²⁹ See F. E. Zeuner, *Dating the Past* (1946), p. 291.

³⁰ It has been stated that the brain of Peking Man gives evidence of his capacity for speech, and of the development of right-handedness; but it may be questioned whether indications of this sort are to be relied on. Cf. W. E. Le Gros Clark, *The Scope and Limitations of Physical Anthropology*, *Report of the British Association Meeting for October 1939*, Address to Section H.

³¹ *Science, Religion and Reality; A Symposium* (1931), p. 48.

CHAPTER IV

THE PALAEANTHROPIC OR MID-PALAEOLITHIC AGE

IT HAS BEEN argued in the Introduction that an historical age begins not only at a point of time, but also at a particular place; and this conception of a time-place boundary applies also to the palaeolithic context, even though the local origin of a new industrial technique may be uncertain, or unknown, and the stages of its extension impossible to trace. Thus the successive ages of palaeolithic industry are to be thought of as expanding series of events in time and place; and linear divisions of time must be reckoned in terms of the geological or climatic phases of the Pleistocene or Glacial Age. Three such phases may be distinguished, though their boundaries in terms of successive glaciations, or high sea levels, is uncertain; but we may, at least, place the last (Würm) glaciation and the preceding warm phase within the upper or late Pleistocene. Three ages of palaeolithic industry are also generally recognized; and the two series correspond in as far as the beginnings of the early, middle and late palaeolithic ages in Europe may be roughly dated to the early, middle and late Pleistocene respectively. But the earlier age in some regions is contemporary with a later age elsewhere, so that the boundary between them is to be thought of in terms, not of temporal succession, but of industrial advance: in fact the early palaeolithic industries linger on in Europe until the late Pleistocene, and in the Far East up to the end of it, though some traces of the influence of later techniques are observable, especially at Choukoutien. Moreover, since the process of cultural diffusion and penetration is going on more or less continuously, and earlier traditions which come into contact with more advanced techniques may undergo various degrees of modification, there is no sharp boundary-line between one age and another, and some transitional assemblages may be assigned either to the earlier or the later age. But the three main stages of advance are clear enough, and may be denominated the age of the hand-axe and

flake, the point and scraper, and the blade and graver, respectively. There is also a third independent context, that of the biological evolution of mankind, which runs roughly parallel with the other two, and is also conveniently divided into three pleistocene stages. Like the archaeological context it has no strictly temporal boundary (as we have seen in the last chapter), since the survivors of an earlier evolutionary epoch may often live on in remoter districts long after they have become extinct elsewhere; and for this reason faunal sequences in widely separated regions provide only a very rough measure of contemporaneity. But in the one context we are concerned with an expanding causal sequence of events, in the other with natural processes of which parallelism and convergence are no less characteristic features than are the expansion of later, more advanced types and the intermixture of old and new. For this reason I have distinguished, in the title of the chapter, between the industrial and evolutionary age.

All the fossil remains of mankind dated to the earlier part of the Pleistocene differ so greatly from any existing race that they have been held to belong to a different species, or even a different genus, from modern *Homo Sapiens*, and each of these supposed distinct species or genera has been given its more or less (and sometimes less rather than more) appropriate Latin name. Perhaps the first of these was the term *Palaeanthropus* for the species represented by the Heidelberg fossil. Similarly we have had *Eoanthropus* for Piltdown Man, *Pithecanthropus* for Trinil Man, *Sinanthropus* for Peking Man, *Africanthropus* for the Lake Eyassi Man, and so on. But the implications of this terminology have lately been called in question. The artificiality of any exact boundary-line between race and species, or species and genus, is commonly admitted, as is also the possibility of modern man's descent from earlier types with eccentric and non-human features. But if we replace our earlier idea of an 'evolutionary tree' sending out a number of diverging branches, only one of which ends in *homo sapiens*, with that of parallel evolutionary steps or stages in different parts of the world, we seem to require a revised terminology. We can dispense with the cumbrous and doubtfully significant apparatus of separate Latin names for each fossil type, and need instead a broad classification of evolutionary stages, while denoting fossil groups and individuals by local or regional names of greater or less extension. Some years ago Elliot Smith proposed the two terms 'palaeanthropic' and

'neanthropic' to mark the two main types or stages of humanity, and terms like 'hominids', 'hominians' and 'anthropians' have been used by other authors.¹ If we wish to distinguish three instead of two evolutionary stages, we might name them, by a useful extension of Elliot Smith's terminology, eoanthropic, palaeanthropic and neanthropic, while at the same time grouping the various types 'vertically' in races or families according to their probable genetic connections. Thus the fossils discussed in the last chapter, namely those of Heidelberg, Piltdown, Trinil, Modjokerto, Peking (or Choukoutien), Lake Eyassi and Rabat, might be classed together as eoanthropic in respect of their morphological development, but in respect of their genetic relations the Asiatic might be grouped as belonging to a Far Eastern family, the two African to a possible African family; while Heidelberg Man stands as a probable ancestor of an occidental or North-Western family, and Piltdown Man, having no clear affinity to any other fossil or living race, is left, not necessarily as a distinct species or genus *Eoanthropus*, but as an isolated eoanthropic type. No doubt departures from accepted terminology are generally to be deprecated, and for that reason I have avoided using the word 'eoanthropic' in the last chapter. But the other two terms are already established, and seem to me preferable to any others now in use; and in using them I want to make it plain that by 'palaeanthropic' I mean a stage of human evolution between the primeval or eoanthropic and the modern or neanthropic, and that the term carries with it no genetic implication, some palaeanthropic types being ancestral to modern races, and others not.

There is one other point of terminology to be noticed before I proceed to discuss the types and families of Palaeanthropic Man, namely the use of the term 'Neanderthal Race' or *Homo Neanderthalensis* to denote what I have called the palaeanthropic North-Western family—or, if a Latin name be required, perhaps *Palaeanthropus Eurasiaticus* would be the most suitable. The name 'Neanderthal Race' was due to the priority in time of the discovery of the Neanderthal skull-cap, which thus became the model to which later discoveries were referred. But more recent discoveries have tended to show that Neanderthal Man, ■ far from being typical of what is still called the Neanderthal Race, is rather a late and probably degenerate outlier. For this reason I prefer to use the term palaeanthropic North-Western family, or *Palaeanthropus Eurasiaticus* for the larger racial group, and to restrict the term 'Neanderthal Race' to its late West European branch.

The earliest geologically of these North-Western Group fossils is the skull found at Steinheim (Württemberg) in 1933. It is probably that of a young woman. It has an enormous superciliary torus, a very low crown and very broad nose. On the other hand there is little prognathism, the wisdom teeth are of moderate size, the skull has a well-developed temporal curve, and a rounded occiput with no trace of the transverse ledge or torus which is a typically anthropoid feature found in many primitive skulls. The brain capacity has been calculated at 1,070 c.c. As noticed in the last chapter, the Swanscombe skull has analogous features, but is too fragmentary for accurate comparison. In fine this Steinheim skull, though primitive, is in some respects more 'modern' than the majority of later palaeanthropic types. This may be due, it has been suggested by Weinert, to the fact that it is the skull of a young woman, and preserves some of the biologically more advanced traits of infancy. The possibility of such individual variation has always to be reckoned with; but the 'advanced' character of the skull is not thereby deprived of its significance.

The Steinheim skull possibly, and the Swanscombe fragments probably, date from the earlier Mindel-Riss interglacial, and may be regarded as intermediate, genetically as well as in time, between Heidelberg Man and the several groups dating from the later Riss-Würm interglacial. Of these the nearest, in space and probably in time, are the fossils from Ehringsdorf (near Weimar), which include the fragments of a young man's skull, found in 1925, typically palaeanthropic in its brow-ridges and the shape of its temporal and occipital regions, but in the thinness of the bones, height of the vault and development of the frontal regions much nearer to the modern type; and the capacity of the brain is reckoned by Keith as equal to that of a modern Englishman. Secondly, there is the group of fossils discovered at Krapina in Croatia in 1899, which include fragments of 12 skulls, 14 pieces of jaw, 144 teeth, and many other fragments. These skulls also display characteristic brow-ridges; but the forehead is relatively high, and some of them appear to be brachycephalic, although all other known types of palaeanthropic man are markedly long-headed, and sometimes excessively so. It has been conjectured that two distinct physical types are represented by the remains; and this appearance of racial dimorphism is of particular interest in relation to the problem of the Mount Carmel fossils presently to be discussed. The fragment of skull discovered in a Galilee

cave by Mr. Turville-Petre in 1925, which is probably a good deal later in date, shows a similar combination of well-arched forehead and heavy frontal torus, and is remarkable also for the narrowness of the frontal region, and for the prominence of the cheek bones: the latter is not a primitive but a specialized human feature of late development. The cranial capacity has been reckoned by Sir Arthur Keith at about 1,400 c.c., which compares with the estimate of 1,480 c.c. for the Ehringsdorf skull.

Surpassing all these in interest and importance are the fossil remains discovered by Professor Dorothy Garrod in the caves of Mount Carmel during her expedition of 1932-3. Of the two caves of Mugharet es-Skhul and et-Tabun, the former yielded remains of ten individuals, men women and children, the latter a nearly complete female skull and skeleton and a male jaw. All the remains date from the latter part of the Riss-Würm interglacial, but those from et-Tabun are probably the earlier. These fossils, taken together, represent an extraordinary mosaic of palaeanthropic and neanthropic features. The et-Tabun female is the most primitive. In the set of the knee and wrist, development of the pelvis and absence of chin she displays anthropoid characteristics; yet the shape of the foot is modern. Of the Mugharet es-Skhul people some are chinless, with palaeanthropic traits of pelvis and backbone, others in respect of their height and well-defined chins and skull forms approximate to the later neanthropic type of the West. In respect of their very long arms they resemble the Krapina skeletons, and the et-Tabun female has other resemblances to the same group. As in other primitive races there is a very marked difference between the sexes, as well ■ between individuals of the same sex. The variability and mixture of widely contrasting traits suggest the possibility that there is a mixture of two distinct racial elements, one palaeanthropic and the other neanthropic. But there is no evidence of any weight that a fully developed neanthropic stock was at this time already in existence; and the whole of the palaeontological record bears witness to a high degree of variability in the human race. It seems likely, then, that these Mount Carmel fossils present ■ with an outstanding example of a major evolutionary change in actual operation. In any case it is generally agreed that they are a transitional group, possibly ancestral to one branch of modern *Homo Sapiens*. Recently skeletons of five individuals have been found by MM. Neuville and Sketelis in a

cave near Nazareth which resemble those of es-Skhûl in combining a relatively high head with a heavy frontal torus, and a broad nose and huge palate with a remarkable absence of prognathism. They are perhaps rather nearer the neanthropic type than the Mount Carmel people.

So far we have been following what is probably the main line of human evolution in the West: we now have to follow its divagations in the north-eastern and western branches of *Palaeanthropus Eurasiaticus*. Of the north-eastern branch remains have been found at Kiik Koba in the Crimea, at Piatogorsk in the Caucasus, and in two rock-shelters in Uzbekistan, one near Tashkent and the other in the gorge of the Zautolosh Darya. The first of these consist of the hand, feet and right leg bones of an adult and lower half of a child's skeleton, the second and third of a skull, the last of the skeleton of a child about nine years old. Though the general resemblance of these remains to other branches of *Palaeanthropus Eurasiaticus* is recognized, their definitive relationship has still to be established. According to Weidenreich the type represented by the child's skeleton from Uzbekistan is closer to the es-Skhûl race of Palestine than the Neanderthal of western Europe; but this is denied by other archaeologists. It seems likely at any rate that it had a higher forehead than the Neanderthal of the West, which it resembled, however, in its massive, chinless jaw and large teeth.¹

Much fuller and more certain is our knowledge of the West-European branch, the earliest members of which are represented by the skulls found at Saccopastore near Rome in 1929 and 1935, and which date, like the Ehringsdorf and Krapina groups, from the Riss-Würm interglacial. Of very similar physical type, though probably of much later date, are the woman's skull found at Gibraltar as early as 1848, though it only came under scientific notice many years later, and the child's skull found at the same site by Professor Dorothy Garrod in 1926. These Saccopastore and Gibraltar fossils may be grouped together as members of a palaeanthropic Mediterranean race, which may have given birth to the later Neanderthal race of the North-West, but which also survived as a southerly branch of it, until their common extinction during or soon after the first extreme of the Würm glaciation. The Neanderthal race itself is abundantly represented by skeletons, or parts of skeletons, from Spy (Belgium), La Chapelle aux Saints (Corrèze), Le Moustier and La Ferrassie (Dordogne) and La Quina (Charente), as well as the original skull-cap from Neander-

thal itself (between Düsseldorf and Elberfeld) found in 1856, ■ jaw from Naulette (near Dinant), and ■ skull from Monte Circeo, on the Italian coast some sixty miles south of Rome. All these remains are dated, with more or less certainty, to the early part of the Würm glaciation, and belong to a clearly defined physical type, which provides the model for our ideal conception of primitive sub-humanity. Neanderthal man had a short, broad, muscular, stooping body, with legs permanently bent forward at the knee, short, thick shins and feet resting on the ground mostly on their outer sides, like those of an infant, or a tree-climbing ape. His big, projecting head, joined to the body in a forward position, like an ape's, by a neck so short and thick that he could only look sideways by turning from the waist, had ■ massive lower jaw with rudimentary chin, flat or non-existent cheeks, wide, flat nose, jutting bony ridges above the eyes, and a long flat skull widening to the rear and with an occipital bun or ridge for attachment of the neck muscles. Though his brain was relatively large on account of the great length and breadth of the skull, the lack of development of the frontal portion, and the simplicity of its convolutions, approximated it to the anthropoid rather than the human type. Yet with all these sub-human traits we have to note that the nasal bones differed from the simian far more than those of modern man, that the teeth and hands were fully human, and that the feet preserved the character not so much of the apes as of the lower monkeys.

That the Neanderthal race (in the restricted ■ of my definition) could not have been ancestral to modern mankind is almost universally agreed; and if we recognize its genetic affinity to the earlier types of palaeolithic man already described, we must regard it as ■ late, degenerate offshoot of the palaeolithic stirps, rather than its typical representative. Anatomically it is highly specialized, rather than primitive. It 'flourished' at a time when the climate of Europe was probably at its worst, extreme cold being combined with damp and heavy rainfall, and its coarse, brutal frame probably expresses to some extent a physiological adaptation to these extreme conditions. Just as an intermediate anthropoid type like *paranthropus* of South Africa could continue on into the Pleistocene as ■ frustrate and eccentric offshoot from the main line of evolution, so we may suppose the palaeolithic stem threw off a branch which, as it were, grew backwards instead of forwards, and became specialized in a simian and atavistic form. This view of the Neanderthal race receives

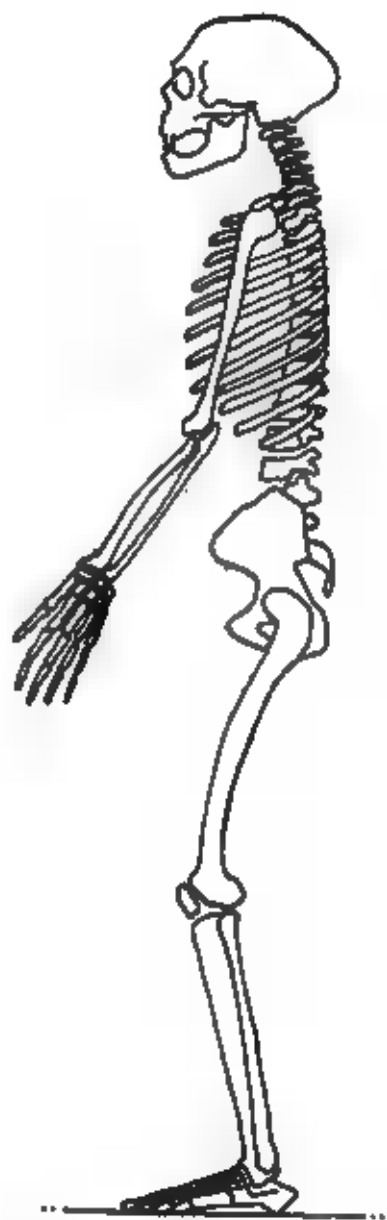


Fig. 7. Neanderthal skeleton from La Chapelle — Saints,
after Boule. About $\frac{2}{3}$ scale

some support from the discovery some twenty years ago at Gardar in Greenland of a skull which exhibits several Neanderthaloid characteristics; yet the evidence is conclusive that it is the skull of a Norse colonist who lived in the twelfth century A.D. and was buried under the shadow of the newly built cathedral. This skull is of interest both ■ suggesting a genetic affinity between the historic Nordics and the western palaeanthropic stock of which the Neanderthal race was ■ branch, and as evidencing how under sufficiently unfavourable conditions there may be biological regression to a more primitive type; and it has been compared again, by Sir Arthur Keith,* to that of a man suffering from acromegaly, a disease due to an excessive activity of the pituitary gland. Thus ■ threefold relationship is suggested between climate or habitat, activity of the ductless glands, and racial characteristics. Though it is not to be supposed that racial character can be explained simply in terms of glandular activity and balance, we have here perhaps a partial explanation of the association in western Europe of a comparatively advanced industrial technique with ■ race of such brutal and sub-human frame and appearance.

The general conclusion is that there developed in the north-west quarter of the Old World during the mid-Pleistocene, probably from a stirps represented by Heidelberg Man, a human species with a massive frame, large head with coarse, brutal features and heavy brow ridges, but mentally well endowed and with fully human hands and power of speech, and otherwise relatively unspecialized. This species was very variable, and by the time of the last interglacial had branched into a number of widely divergent races over Europe and Hither Asia, some of which were closely approaching the neanthropic type, while others followed a more ape-like trend. With the onset of the Würm glaciation and of arctic conditions over most of Europe the scene was occupied by the tough, regressive, highly specialized Neanderthal race, while in the more favoured area of the Near East another branch from the same stock threw off the last vestiges of its palaeanthropic guise. Yet we have to note that even among the Neanderthals the evolution of the brain continued, and that the fossil skulls from La Chapelle, La Ferrassie and Monte Circeo, which are considered to be the latest in time, are also the largest.

The development of palaeanthropic humanity in other parts of the world is less fully documented, and calls for briefer notice. At Ngandong in Java, associated with an upper pleistocene fauna, have been found eleven brain-pans or parts of skulls, with two

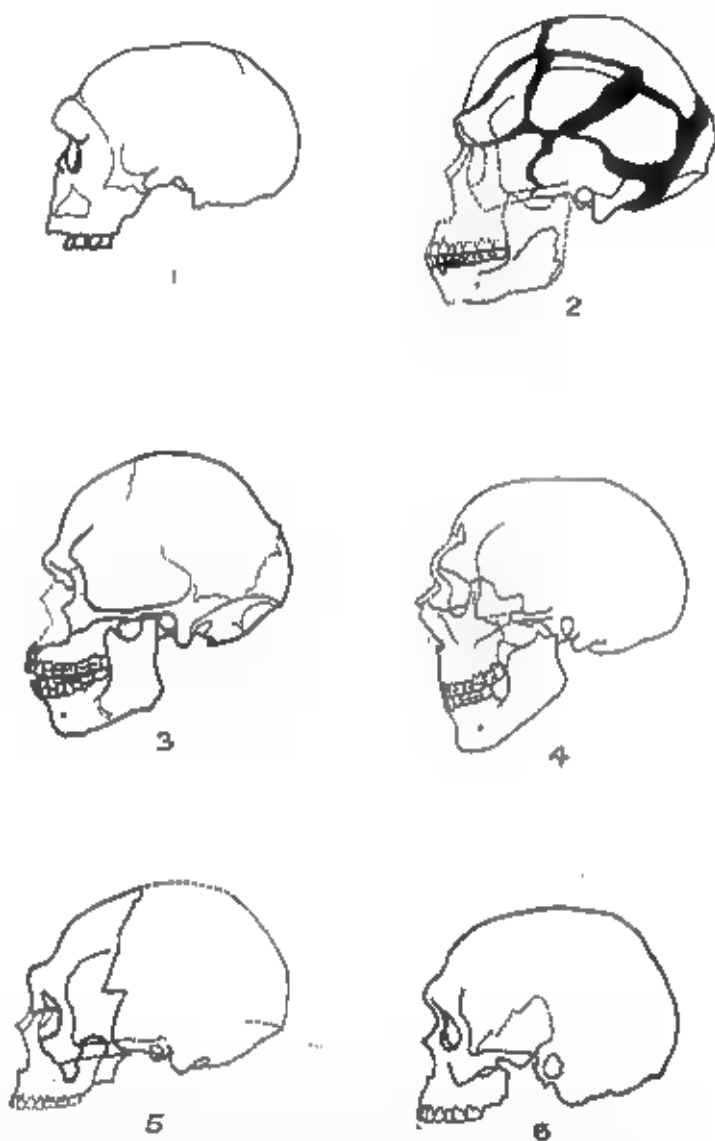


Fig. 8. Palaeanthropic skulls: (1) Steinheim skull, after Weinert; (2) Ehringsdorf skull, after Weidnreich; (3 and 4) skulls from Mugharet es-Skhül, Mt. Carmel, after McCown and Keith; (5) Galilee skull, after Keith; (6) Nazareth skull, after Boule. About $\frac{1}{2}$ scale

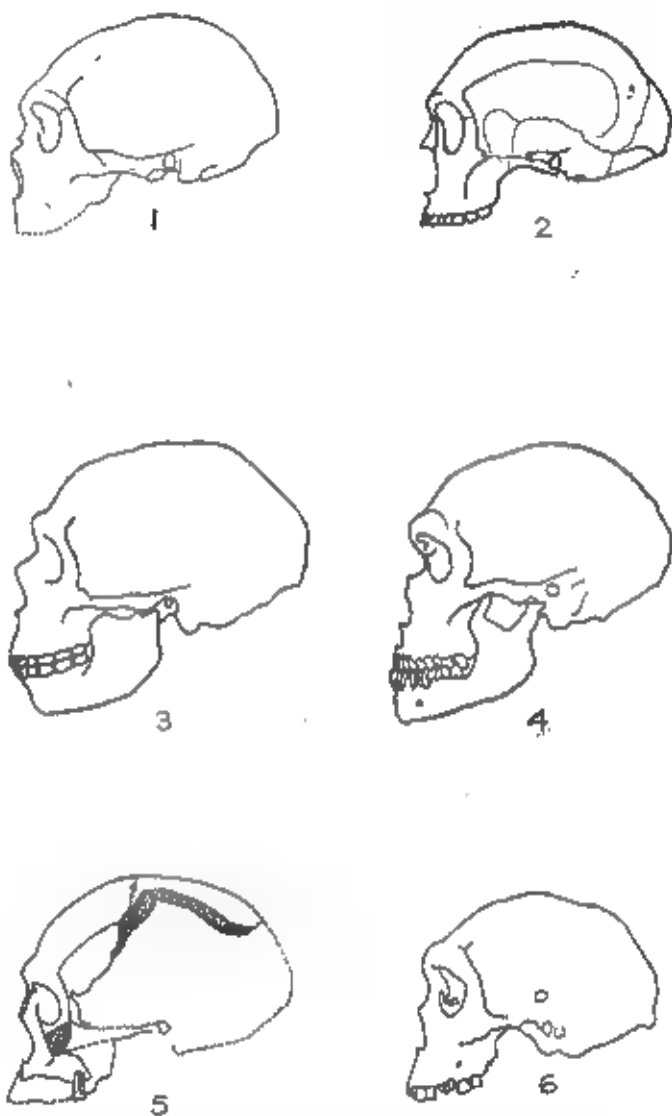


Fig. 9. Palaeoanthropic skulls: (1) Monte Circeo skull, after Blanc; (2) woman's skull from Gibraltar, after Keith; (3) La Chapelle skull, after Boule; (4) La Ferrassie skull, after Boule; (5) Florisbad skull, after Dreyer; (6) Rhodesia skull, after Smith Woodward. About $\frac{1}{4}$ scale

tibias. The skulls are large, have a continuous frontal torus, flat forehead, low vault and occipital ridge. Their most remarkable characteristic is the way the occipital bone is bent back below the ridge at right angles. This is a primitive and bestial trait, found among the great apes, also in Trinil and Peking Man, as well as among living Australians. In other respects also the skulls recall the coanthropic types of the Far East, and it is generally accepted that they represent the connecting link between them and the later fossil and living races of South-East Asia. Thus they provide important evidence of the evolution of humanity pursuing a parallel and independent course in different quarters of the Old World. It is to be noted, however, that this parallel course is by no means contemporaneous, and that Ngandong Man, whose genetic and biological position is comparable with the Steinheim-Ehringsdorf rather than the later Neanderthaloid fossils, lived at a time when the Neanderthal race was extinct and the Western quarter already long since occupied with neanthropic races. Nor are we to suppose that Ngandong Man was directly descended from Trinil or Modjokerto Man. It is ■■■■ likely that he entered the island at a time when it was joined to the mainland during a glacial lowering of the ■■■ level, in company with other new fauna, and that his original homeland, and that of the other types and branches of Far Eastern man, was southern China. Perhaps the many unexplored recesses of that vast and fertile region will one day yield their secrets.

The skull found at Broken Hill, Rhodesia, in 1921 occupies a more enigmatic position. In respect of its enormous brow ridges extending outwards beyond the eyes, the huge eye sockets, sunken cheek bones, wide nasal opening and long, projecting upper jaw the skull is extremely primitive; yet the vault is more rounded than in either the Neanderthal or Ngandong types, and surprisingly thin: the teeth are normal; and the forward position of the occipital orifice indicates a fully upright stature. Some doubtful light is shed ■■■ the enigma by the more recently discovered very imperfect skull from Florisbad, near Bloemfontein. This has the general palaeanthropic characteristics of low, flat vault, heavy brow ridges, broad nose, prognathous jaw, and large canines; but the brow ridges do not form a complete torus over the eye sockets, and the back of the skull has no trace of ■■■ ridge; so that some anthropologists would classify it as neanthropic. It would seem to present then, an intermediate type, comparable with the much more fully known Mount Carmel fossils. According to Keith⁴

it provides a link between Rhodesian Man and the existing races of Bushmen and Hottentots, which it resembles in the formation of the upper face and projecting cheek bones; and Boule also admits the descent from Rhodesian Man as a possibility. But it cannot be said that the genetic relation between the Lake Eyassi, Broken Hill and Florisbad fossils is firmly established, all the more as their relative geological dating is so uncertain. The Broken Hill remains, though associated with mid-palaeolithic tools, are also associated with a post-pleistocene fauna, which suggests that they might represent not so much a 'primitive' as a late, highly specialized and degenerate race. In any case we may conclude that Africa had its own palaeolithic race or races, differing morphologically from both Western and Eastern groups, though whether evolving from a separate early pleistocene stirps, or migrating from Asia by one or more stages during the mid-Pleistocene we cannot say.

The typical tools of the fully developed Mid-Palaeolithic are points and scrapers; but this development was led up to by several stages of technical advance, and the combination of older and newer traditions; so that these industries might be described generically as composite, or 'polymorphic', to use Harper Kelly's term.⁶ The first stage of advance was the introduction and spread of the Levalloisian technique, so named after the type-station of Levallois-Perret near Paris. This technique consisted of (a) shaping a lump of stone into a 'tortoise-core' with an oblong upper surface, and sides either at right angles or converging downwards to a smaller base, (b) preparing one or more faceted striking-platforms along the upper edge, (c) striking off one or more flakes by means of a punch or percussor, the blunt point of which was held steady on the faceted platform while it was either struck by a mallet or thrust downwards by a sudden application of muscular pressure. Both the shape of the core from which the flakes were struck, and the number of flakes which were struck off it, vary considerably from place to place and time to time; but what are common features of all Levallois industries are, first, the careful preparation of the core in such a way that the flake struck off needs little or no further trimming, and second, the small faceted striking-platform more or less at right angles to the main axis of the flake, and bearing witness to the use of the percussor technique. The flakes struck off also vary considerably in shape and size, some, and especially the later, being long and narrow, and others

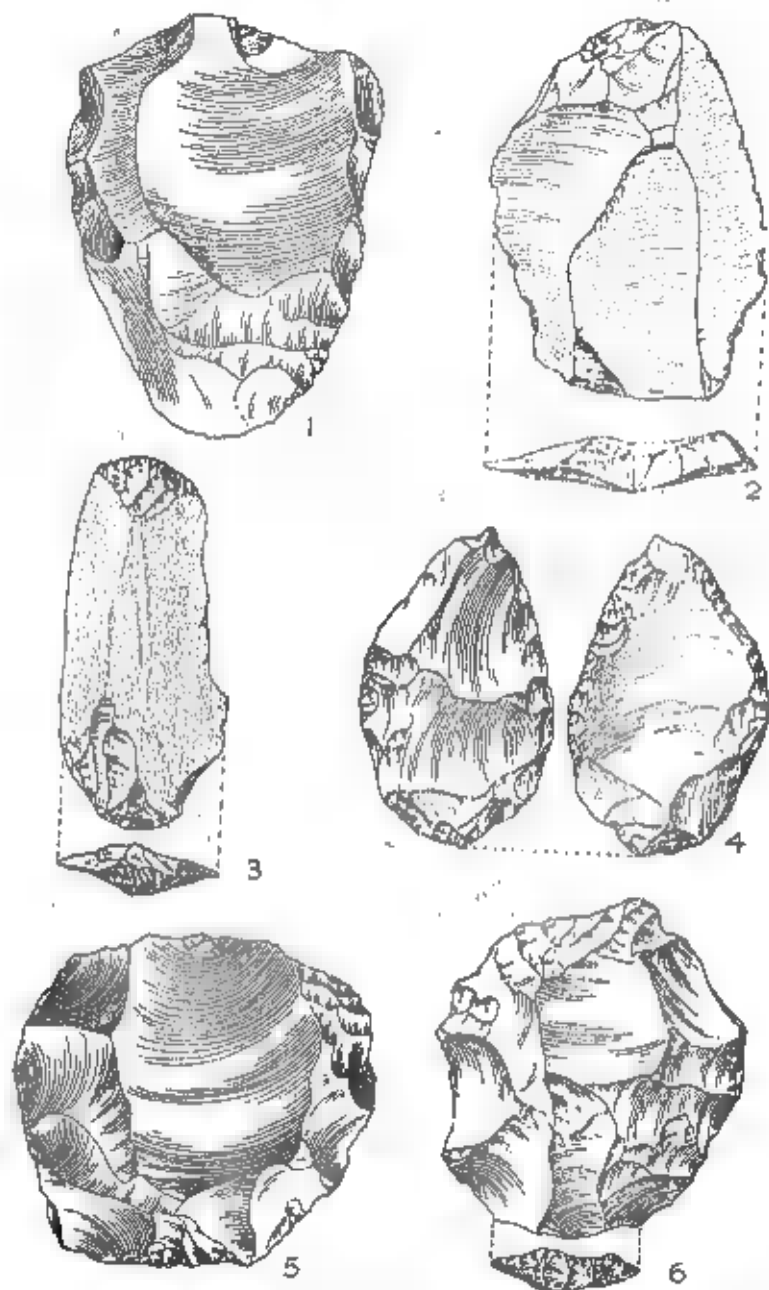


Fig. 10. Levalloisian tools from Kharga Oasis, Egypt, after Caton Thompson. Lower Levalloisian: (1) tortoise-core; (2) flake struck from same with slight marginal trimming; (3) long flake with original cortex on exterior face, finely trimmed to make end-scraper. Upper Levalloisian: (4) flake with well-developed secondary working, including thinning of butt; (5) discoid core, and (6) flake therefrom. $\frac{1}{2}$ scale

triangular; but the majority have a roughly ovoid outline, the more primitive being coarser and thicker than the later.

Tools or industries of this type are found in western Europe and Germany, Egypt, Palestine, Arabia and the eastern shores of the Black Sea, and in North, East, Central and South Africa: in Tanganyika they are associated with the primeval Lake Eyassi fossil type. According to Breuil's original theory the tradition was derived from the Clactonian *via* the Mesvinian, a crude flake industry named from the station of Mesvin in Belgium⁵; but it cannot be said that there is any general agreement as to the time, place or manner of its origination. While in Europe and East and South Africa Levalloisian tools are found at the same levels as late Acheulian, in Egypt and Palestine they occur only at post-Acheulian levels; and in East Africa they are later in relation to the Acheulian than they are in South Africa. While there is no reason to suppose that the later Acheulian in these different regions was even roughly contemporary, both the geological and the archaeological evidence is against the supposition that the Levalloisian either originated in Egypt, or passed from Europe through Egypt to extra-Saharan Africa. But it is possible that there may have been ■■■ other area of origin or transmission between the Nile valley and the coast of Morocco, and possibly the recent discovery of a coarse Levalloisian in Tripolitania, following an archaic hand-axe type of industry may be a pointer in this direction.⁷ It is also to be noted that the Levalloisian is associated in many stations, originally as well as in its later stages, with the Acheulian rather than the Clactonian tradition⁸; while the Tayacian (so named from the commune of Tayac, within which the cave of La Micoque is situated, where it occurs in levels below the 'true' Micoquian to be referred to later) is a technique of mixed Clactonian and Levalloisian type which seems to evolve towards the Mousterian by a separate line of descent. Perhaps the Levalloisian itself is to be regarded as a technique which developed independently in more than one area through the growth and contact of earlier traditions, rather than ■ a single distinct tradition originating at one time and place.⁹ It is certain in any case that by the earlier part of the late Pleistocene industries of Levallois type were spread over Africa, the Levant and many parts of Europe, and in some areas, such as ■ Britain and Poland and Uganda, lasted down to the end of the Glacial Age and beyond. It is certain also that in many African industries, the Victoria West and Fauresmith of South Africa,

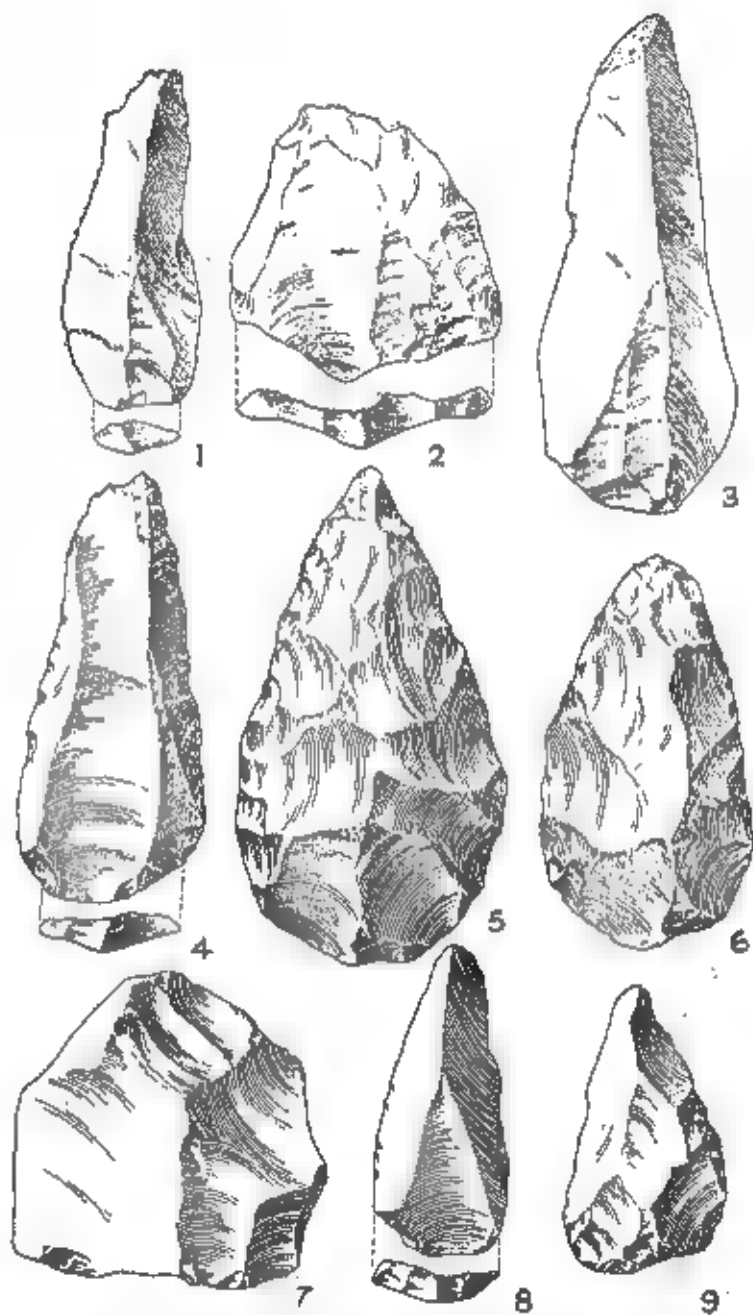


Fig. 11. (1-3) Nanyukian tools from East Africa. (4-9) Fauresmith tools from Fauresmith, South Africa; (4 and 8) flakes; (5, 6 and 9) hand-axes; (7) core. After Leakey. $\frac{1}{2}$ scale

Nanyukian of Kenya (from Angata Nanyokie, Naivasha Province), Sangoan of Uganda (from Sango Bay in Lake Victoria), Kalinian of the Belgian Congo (from Kalina, near Leopoldville), the Levallois technique is employed for the manufacture of late Acheulian types of hand-axe. All these industries except the first are certainly late—that is, contemporary with the development of upper palaeolithic techniques elsewhere; and a similar late type of 'Acheulian Levallois' has been recorded by T. T. Paterson and C. F. Tebbutt at a palaeolithic station at St. Neots, Huntingdonshire.¹⁰

The second main mid-palaeolithic tradition was the Mousterian, named from the cave of Le Moustier in Dordogne, whose most characteristic tools were the small triangular point, struck from a 'disc' type of core and further trimmed after detachment, and the side-scraper, which after detachment had a series of little flakes nibbled out of the side so as to produce a sharp, slightly serrated working edge. While the Levalloisian tradition is Eurafrian, the Mousterian is Eurasiatic. It is found in India and Hither Asia, the Crimea and Caucasus region, central and southern Europe and French North Africa, but not in Egypt or Africa south of the Sahara: in Palestine and in some sites of western Europe it is found mixed with the Levalloisian. Its place of origin may well have been India or some other region of Hither Asia, whence it spread westward over Europe during the Riss-Würm interglacial, ousting or incorporating earlier Levalloisian and Acheulian traditions, but leaving them to continue in some outlying regions, and not effectively penetrating into the Nile valley, or beyond into Central and South Africa. In Morocco, southern France and Germany and south-eastern Europe, the Crimea, Caucasus and Palestine, a transitional industry is found, called Micoquian after the type-station of La Micoque near Les Eyzies, which combines dwarf hand-axes of the Acheulian tradition with Mousterian points and scrapers; but while the Micoquian of France and Morocco and Palestine are intermediate in time between the Acheulian and Mousterian (or Levalloiso-Mousterian), in Germany and south-eastern Europe it is found at later levels, and represents rather an east-European variety or 'facies' of the classical Mousterian of France.

According to Drs. J. G. Lalanne and J. Bouyssonie, who have made a detailed report of the palaeolithic assemblages there,¹¹ the Mousterian tools at Laussel (Dordogne), though still crude and undifferentiated in comparison with those of the late palaeolithic,

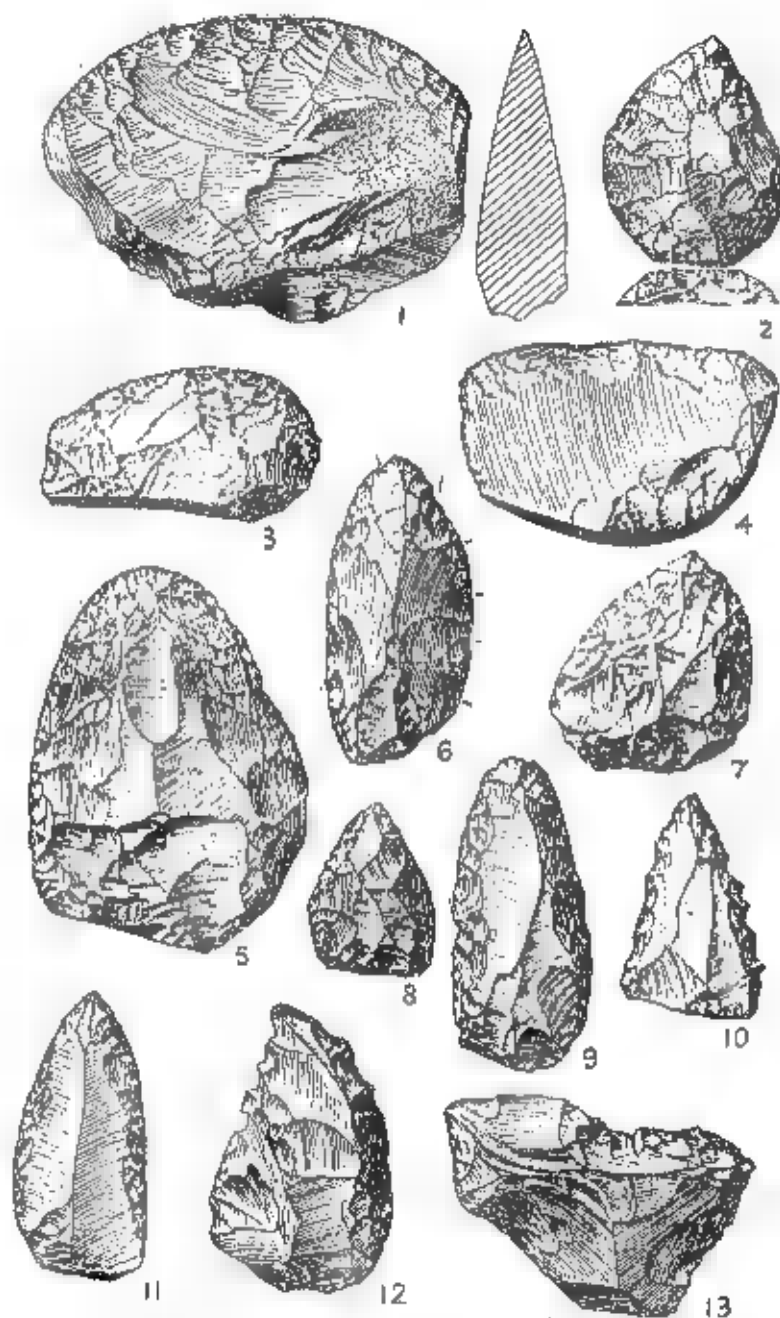


Fig. 12. Mousterian tools from Laussel, Dordogne, after Lalanne and Bourysson: (1 and 3) scrapers; (4) scraper with cutting edge on left side; (2, 5-8, and 11) points; (9) double scraper; (10) point with regularly toothed edge; (12) a kind of backed knife, with cutting edge heavily notched; (13) multiple tool with two points and three concave scraper edges. $\frac{1}{2}$ scale

may be divided into two main classes, those for multiple use, deriving from the earlier hand-axe type, and those for special uses, of which the following are distinguished: flakes with rather ■ thick edge, sometimes concave, for scraping; those with a finer edge, often arc-shaped, for cutting; those with a very fine edge, generally rectangular, for sawing; those with blunted back for cutting like a knife; heavy hatchets or cleavers with double-trimmed edge for hacking; points for piercing, some rather long and thin, others shorter and blunter; toothed scrapers for tearing; and finally, balls or disks for crushing. This catalogue gives some idea of the technical efficiency achieved during this age. We may note in particular that the tools classed as 'scrapers' were designed for many other purposes besides that of scraping skins, that the backed blade, which is the characteristic tool of the upper palaeolithic, had already made a tentative appearance, while on the other hand bone was only utilized occasionally and in the crudest way. The authors suggest that the all-purpose tools may have been carried by the hunters on their expeditions, while the special tools would have been kept at the permanent camp. But perhaps the most significant fact is that ■ of these tools were fastened into handles. Only a few late points show a definite tang; but in many typical Mousterian specimens the butt is reduced as though for fastening into a shaft, and in ■ cases according to MM. Lalanne and Bouyssonie actually shows signs of polishing where the wood rubbed against it; and a number of 'scrapers' also were provided with notches, presumably for fastening into handles. We may conclude that the art of hafting gradually developed during the mid-palaeolithic industrial age, and that in its earlier form it was more dependent on the use of resin or some other adhesive substance than on a suitable shaping of the stone head: perhaps, ■ among the modern Australians, human hair was used as a binding material. That the provision of a tang for fitting the head into a handle, which seems to us so obvious a measure, should have been so long delayed, is a striking example of the enormous difficulty and importance of these earliest steps of technical advance. It is perhaps not too much to say that, after the original invention of stone tools and the technique of knapping, the development of the technique of hafting was the next main step of advance, not only providing the huntsman with tools and weapons of far greater efficiency, but being the necessary preliminary to nearly the whole later range of handicrafts and mechanical inventions.

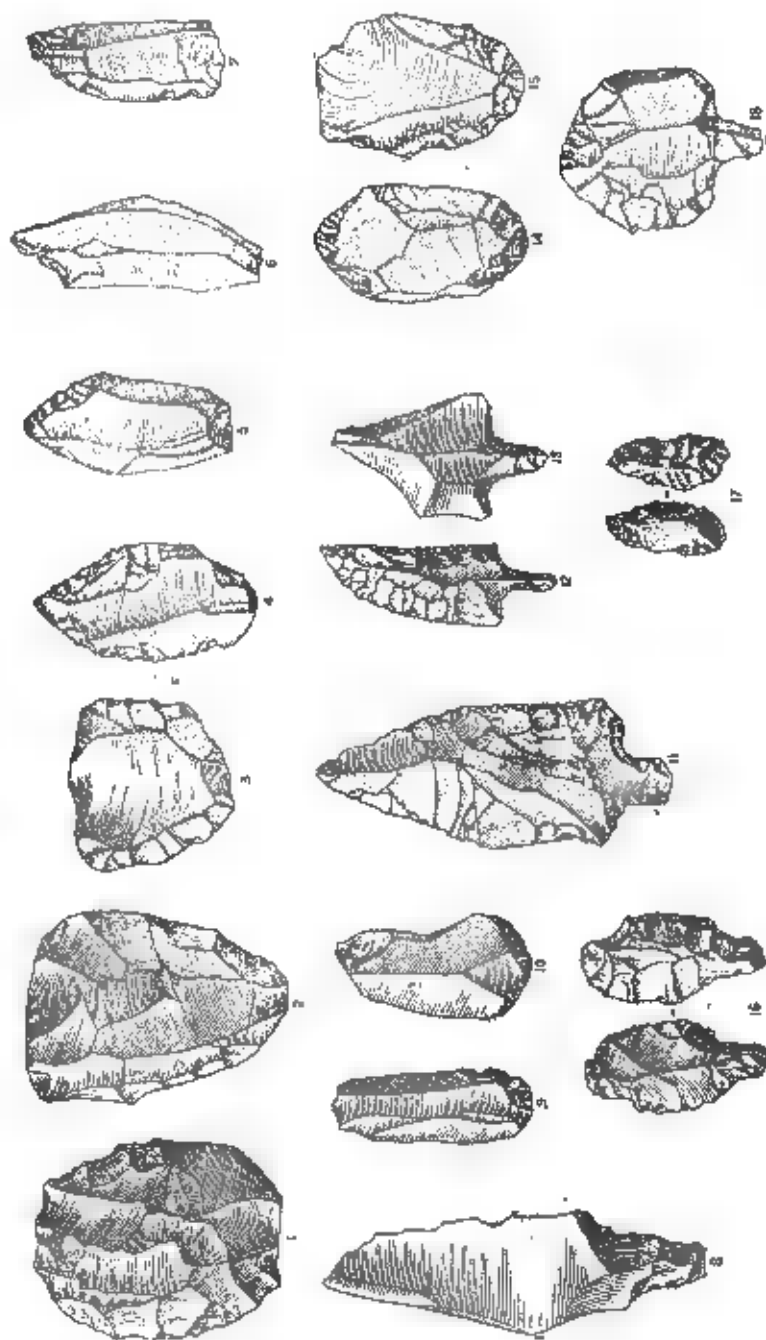


Fig. 13. Aterian tools from Djouf-el-Djemel, Tunisia, after Le Du: (1-3) tortoise cores; (4, 5 and 17) hand points; (6 and 7) flake-blades; (9, 10 and 15) end-scrapers on flakes; (14) double end-scraper; (8, 11-13, 16 and 18) tanged tools, including a tanged side-scraper (18), and what may be a tanged graver (8). $\frac{1}{2}$ scale

The last mid-palaeolithic tradition that requires consideration is the Aterian (named from Bir el-Ater, south-west of Tebessa in Algeria) of North Africa. This tradition originated, probably in Morocco, quite towards the end of the Glacial Age, when the upper palaeolithic was already fully developed elsewhere: in spite of ■■■ late characteristics it still preserves the fundamental forms of the earlier age—or perhaps we might put it, lacks those of the upper palaeolithic. It includes typical Mousterian points and scrapers, also, what is quite new, small points with barbs and a fully developed tang, such as are hardly distinguishable from some types of neolithic arrow-head made many thousands of years afterwards by semi-historic peoples. If indeed these barbed points were used as arrow-heads, as seems most likely, then they bear witness to the invention in North Africa during the late Pleistocene of the bow and arrow. This was another long step forward in man's mastery of material resources, and argues that in some respects these North Africans were ahead of the upper palaeolithic peoples of Europe and Asia, whose typical missile weapon was the spear-thrower, which the bow and arrow were destined in course of time to supersede over nearly the whole world. Besides these barbed points the Aterian also includes an evolved Acheulian form of hand-axe, and long leaf-shaped points carefully trimmed ■■■ both sides, probably by pressure-flaking. These latter forms were distinguished by M. Reygasse as ■ separate industry named S'baikian after the station of Bir es-S'baikia, on the borders between Tunis and southern Constantine; but it is now generally held that the S'baikian is at most only ■ local stage or facies of the Aterian.

The Aterian industry is found all over French North Africa from the Atlantic to Tunisia, southward through the Sahara, and, on a decreasing scale, eastward through Libya to the Nile valley; and it has affinities with, and was perhaps partly ancestral to, the latest palaeolithic industries of many parts of Africa, the Djokocian of the Congo, which is characterized by long, slender, pick-like tools and points trimmed on both faces, the very widely spread Still Bay of East and South Africa, with its beautifully trimmed leaf-shaped points, the Khargan and other 'epi-Levalloisian' industries of Egypt, ■ well ■ the later Oranian of Morocco itself.¹² All over this vast region we find the same general tendency to diminishing size, leading eventually to microlithic forms, and at the same time a contrast to the characteristic upper palaeolithic techniques of Europe and Hither Asia. Africa, in fine, remains

for the most part outside the upper palaeolithic age, in the ordinary European sense. Instead the mid-palaeolithic develops, from a 'Levallois-Mousterian' in which the older Acheulian forms are often retained, *viz* the Aterian to a generically distinct 'African upper palaeolithic'; and this again leads on directly to the mesolithic and neolithic industries of post-glacial times, which survived in places, as in the Wilton of South Africa, down to historical and even modern times. How far this industrial separation of Africa from Eurasia was due to geographical conditions, such as the desiccation of the isthmus of Suez, it is impossible to say; but the fact of it is indisputable. On the other hand, as we shall see in the next chapter, there is clear evidence of communication between Europe and Africa at the western end of the Mediterranean, and of the spread of the Aterian influence into Spain; and this sea communication across the straits of Gibraltar may well go back as far as the Levallois-Mousterian age, that is, to the early stages of the Würm glaciation.

The Neanderthal race of western Europe was not, it has been suggested, a typical representative of palaeanthropic mankind; nor is the latter to be associated with all stages of the mid-palaeolithic; for the Aterian of North Africa was almost certainly the product of a neanthropic people, while it is to the earlier and more highly endowed races of Weimar and Krapina and Palestine that we must attribute the primary steps of cultural advance from the lower palaeolithic. Yet we have to admit that in spite of their unprepossessing appearance, and though their huge, muscular hands seem to have lacked the delicate adjustment between thumb and fingers possessed by modern man,²⁸ the Neanderthals' tools show no falling off of skill, but rather the contrary. It is indeed remarkable that the anatomical gap separating palaeanthropic from neanthropic man does not seem to be reflected in the industrial series, and we are bound to conclude that Neanderthal man was much closer to us mentally than he was in physical constitution and appearance. In any case he has to stand as the main representative of mid-palaeolithic life and culture, owing to the limitations of our knowledge.

The Neanderthals lived in caves, or rather at the entrance of caves, or under shelters of overhanging rock, generally with a southern aspect. The animals most commonly hunted were the wild horse, wild ox and reindeer; but they also successfully attacked the cave bear, brown bear, woolly rhinoceros and

mammoth, which during this period attained its fullest development and widest extension. It is not easy to understand how they succeeded in killing these huge and dangerous animals, covered in some cases with an impervious thickness of hide and wool and hair. Probably they made use of fire against the bears and other animal rivals for the possession of the caves; and the huge masses of bone found at the foot of the precipitous cliffs at Solutré (near Mâcon on the Saône), and at other stations, encourage the suggestion that, using torches in an organized battue, they drove whole herds of animals to self-slaughter over the precipice. Such a battue presupposes a considerable degree of social organization. Piles of stones found stored in some caves were perhaps used as ammunition to drive off prowling enemies. Probably they wore skins to protect themselves against the cold: the awl-shaped tools would have been used, among other purposes, for boring holes in the skins so that they could be fastened together with some kind of animal gut or fibre. Points, besides being hafted, were used for splitting the bones of dead animals in order to get at the marrow. Bones pierced in this way have been found in midden heaps accompanied by a large number of points, many of them broken at the tip. Points may also have been used for skinning and cutting up the carcasses of animals.

The charred and split condition of some of the human bones found at Krapina suggest that the inhabitants, like those of the Choukoutien caves, were cannibals; and there is further evidence of the practice at Ehringsdorf and in the Shukbah cave in Palestine as well as in the later palaeolithic station at Předmost, and elsewhere. In short, cannibalism seems to have been a world-wide institution, whether spread from a single source or arising 'naturally' at different times and places. But among the palaeanthropic races of the West we also find evidence of burial. At Mugharet es-Skhul ten graves were found of children and adults. The bodies were buried in a closely contracted position, and in the case of one man the jaw bones of a wild boar appear to have been placed in the folded arms. No other signs of ceremony were found; but from France Neanderthal burials have been reported with a covering of stones over the head to protect it, and a little pile of flint tools, often of unusually careful workmanship, underneath it for a pillow, and with food offerings laid beside the body in the trench. In one case, at La-Chapelle-aux-Saints (Corrèze), a fire lighted on top of the grave suggests a funeral feast; and near by was found a single rhinoceros-horn, placed there perhaps as a

dimly conceived fetish or memorial of the dead. I think it would be a mistake to regard these ceremonial interments—and it should be noted that the more elaborate French burials are matters of interpretation rather than of fact, and have been called in question¹⁴—as evidence of a belief in life after death. Rather they are evidence of primitive man's inability to conceive the physical nature of death, which leads to the disintegration of the corpse only after a considerable delay. It has been observed how, among captive baboons, a mother will cling to the corpse of its infant until it disintegrates, but if it is removed will show no signs of bereavement.¹⁵ So we may suppose that the primitive human, though at a much higher state of mind, would not distinguish so absolutely as we do between the intermission of life in sleep and the sleep of death, and so long as the corpse retained some of the appearance of the living creature would still feel towards it in some measure as when it was alive. After all is not that true of ourselves, though our knowledge contradicts our feelings? Fear prompted the custom, common among modern uncivilized peoples, and which the crouched-up position of the corpses at Mugharet es-Skhul and elsewhere suggests was already in use in palaeolithic times, of binding the corpse, so as to prevent it from coming to disturb the living. Fear and affection suggested its respectful treatment and the provision of funerary comforts. Nor is there any fundamental contradiction between rites of burial and cannibalism; for the latter was an alternative ceremonial way of disposing of the still surviving *mana* of the dead, by assimilating it into the bodies of the living.

As the Würm glaciation moved to its first extreme, the whole of northern Europe was turned into arctic tundra, swept with blizzards and covered with snow through more than half the year. The steppe animals disappeared. The combination of extreme cold with damp made the conditions of life hazardous and miserable for almost every form of animal life, human and non-human. The caves no longer afforded an adequate protection against the climate, and the bones of men and beasts found in them often show signs of disease: the fire at the cave mouth was a refuge both from the bitter world outside and the dripping darkness of the interior. Either during this phase, or with the return of more favourable conditions, the Neanderthal race finally succumbed to the climate, and the competition of newly arrived neanthropic peoples from the East. Like some of the other mammalian species of the Pleistocene they had fallen into decrepitude through

over-specialization, and were not fitted to compete with the younger branches of *Palaeanthropus Eurasiaticus* which had retained their plasticity. Yet, though they perished without descendants, we must bear in mind that the period of their flourishing may well have been several times as long as all subsequent time from the date of their extinction until the present day.

NOTES

* Weidenreich (*L'Anthropologie*, Vol. 49 (1939), p. 82 *et seq.*) uses the terms 'Prehominids' and '*Homo Primigenius*' for the two earlier stages, Grahame Clark (*From Savagery to Civilization*, 1946), 'hominids' and 'hominians', Arambourg (*op. cit.*, p. 66), 'Pithecanthropoids' and 'Neanderthaloid Hominids' or '*Homo neanderthalensis*', though he admits that the latter term is not very suitable, and only the 'laws of priority' oblige him to use it. If it be agreed that Peking Man used tools and fire, then it seems to me that terms like 'Prehominid' and 'Pithecanthropoid' are hardly suitable; and in that case '*Homo Primigenius*' is also unsuitable for denoting what is not the primeval, but the second or intermediate 'race' or stage of mankind.

* Cf. Boule, *op. cit.*, pp. 405-406, *L'Anthropologie*, Vol. 43 (1933), p. 333 and Vol. 50 (1941-46), pp. 529 *et seq.*, H. Field and E. Prostov, *Archaeology in Uzbekistan in Antiquity*, Vol. XV (1941), pp. 194-196, and A. H. Brodrick, *Early Man* (1948), ch. v.

* *New Discoveries relating to the Antiquity of Man* (1931), pp. 486-489.

* *The Florisbad Skull in Nature*, Vol. 141 (1938), p. 1010.

* P.P.S., Vol. III (1937), p. 15.

* The reference is to the article already quoted in Note 13 to the previous chapter.

* G. B. M. McBurney, *The Stone Age of the Libyan Littoral; The Results of a War-Time Reconnaissance in P.P.S.*, Vol. XIII (1947), pp. 56-84.

* Cf. K. P. Oakley in *Conference on the Problems and Prospects of European Archaeology held at the University of London Institute of Archaeology*, Sept. 16-17, 1944, pp. 19 *et seq.*

* Miss G. Caton Thompson in her article *The Levalloisian Industries of Egypt in P.P.S.*, Vol. XII (1946), pp. 57-120, has argued that the Levalloisian industry of Egypt was a local and independent development, and that until late palaeolithic times environmental change rather than culture contacts was responsible for the occurrence of similar technological changes everywhere. It is not for me to express an opinion on the particular case; and parallel industrial developments in separate regions have certainly occurred in prehistoric and historic times. But it may be permissible to ask (a) whether the underlying

causes of human events can ever have differed in their essential nature from one age to another; (b) whether the apparent difference between early and late palaeolithic times is not to be accounted for rather in terms of the degree of our knowledge; (c) whether to postulate 'environmental change' ■ the efficient cause of human inventions does not involve us in the fallacies of materialism. In any case Miss Caton-Thompson in her *Huxley Memorial Lecture for 1946 (The Aterian Industry; Its Place and Significance in the Palaeolithic World, p. 29)* herself opposes to 'culture contact' ■ a cause of technical innovation, not mere 'environmental change', but "man's experimental and unpredictable nature, tempered by his environmental needs"—which is something rather different.

Speaking as a layman and merely from a logical point of view I venture the following reflections on this all-important topic:

1. Technical inventions are always the work of an individual agent, who lives in a society with (a) a specific cultural tradition, (b) a specific natural environment, and, probably, (c) some external human relations. (a), (b) and (c) ■ merely aspects of the unique individual act, but on different occasions one or other of these aspects is likely to be objectively more prominent: e.g. where a new technique is associated with a change in the climatic or faunal conditions, we single out (b) as the efficient cause, though (b) 'by itself' cannot be the cause of any human event. In other words 'environmental change' and 'culture contact' are two convenient abstractions which we use to link together the archaeological data conceptually; but behind their abstract simplicity lies always the unending complexity of the actual and particular.

2. The term 'culture contact' includes an almost infinite range of human relations, and their immediate or delayed effects. E.g. suppose two human groups with cultural traditions ultimately derived from a single source, but now widely separated and subjected to a similar kind of environmental change, and each reacting in a similar way. We tend to ascribe their similar reaction solely to the external change, though it depends no less on the original unity of their cultural tradition. Again, suppose ■ of a wandering band of hunters A picks up a tool or weapon dropped by a member of another band B with a different industrial tradition. This chance find may affect the industry of group A in a way quite impossible to trace to its source. In fine while the effect of culture contacts is sometimes evident, it may be doubted whether it is ever possible to state absolutely that no cultural continuum exists.

3. All 'typical' industries and techniques are to some extent ideal (as all natural kinds are), and the more widely the term is applied, the more ideal it becomes. As Miss Caton Thompson vigorously expresses it, "I doubt if any lithic assemblage is techno-typologically 'pure', unless it be one of the primeval pebbles hurled by sub-hominids at each other in Equatorial forests." In other words the terminology of the systematist is always as it were a little out of focus; and ■ the field of

observation grows in extent and complexity, the more difficult becomes the adjustment of focus to the multifarious particulars.

¹⁰ *Studies in the Palaeolithic Succession in England*, No. III in *P.P.S.*, Vol. XIII (1947), pp. 37-46.

¹¹ *Le Gisement paléolithique de Laussel in l'Anthropologie*, Vol. 50 (1941-46), pp. 19 *et seq.*

¹² See the comprehensive study of the Aterian Industry in Miss Caton Thompson's *Huxley Memorial Lectures*, referred to in Note 9 above. Miss Caton Thompson tentatively suggests that the Still Bay industry may be older than the Aterian, rather than derived from it. But she admits, (*loc. cit.*, p. 26) that this supposition is "contradicted by the typology of the respective industries, since the Still Bay is decidedly the more 'evolved'."

¹³ So Elliot Smith in *Human History* (rev. edn., 1934), p. 77.

¹⁴ Cf. Grahame Clark, *op. cit.*, pp. 42-43.

¹⁵ See S. Zuckerman, *The Social Life of Monkeys and Apes*, p. 298.

CHAPTER V

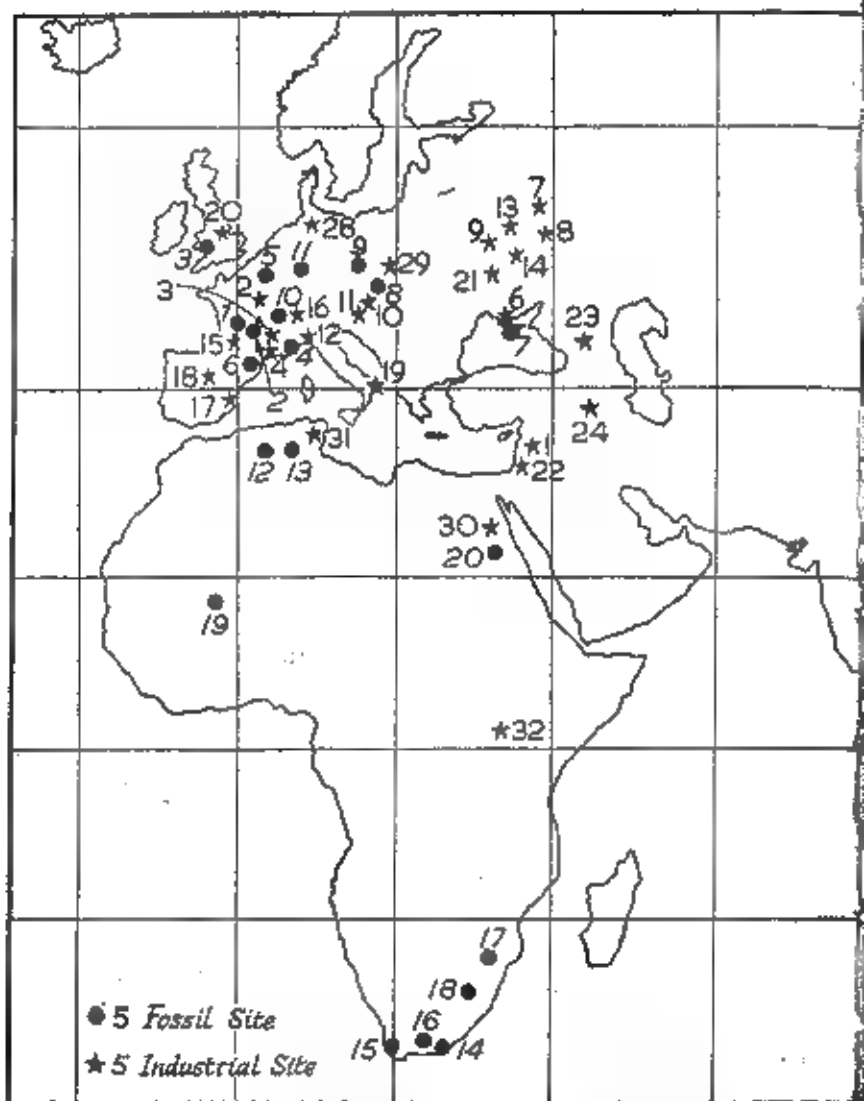
THE NEANTHROPIC OR UPPER PALAEOLITHIC AGE

WE HAVE SEEN in the last chapter that there were human groups in Palestine evolving towards the modern type of mankind, probably before the onset of the Würm glaciation. Claims have frequently been made in the past for the presence, in Europe or Africa, of fully neanthropic man at a much earlier date. None of these claims has been substantiated; but in 1947 a discovery of fossil remains at Fontéchevade (Charente) opened up a new vista.¹ The remains were found, in association with a crude Tayacian industry and a warm fauna, under a hard stalagmite floor, above which were layers containing Mousterian and upper palaeolithic assemblages: they consist of a skull-cap which includes part of the frontal bone, the right and left parietal and part of the left temporal, and of some detached fragments of the occipital, the glabella, and upper interior angle of the orbit. The skull seems to have been that of an adult, and to have been much smaller than that of a modern man; but the detached fragments in particular are thoroughly neanthropic, and indicate a complete absence of the heavy supraorbital torus characteristic of *Palaeanthropus Eurasiaticus*. It is clear then that there existed in western Europe before the arrival of Neanderthal Man there a race which had in some respects evolved much further than its successor in a neanthropic direction. We have to remember, however, that in Piltdown Man similarly neanthropic cranial features were combined with an extremely primitive type of jaw; and the small brain of Fontéchevade Man, and his association with a crude Tayacian industry, indicates that he was probably the mental inferior, not only of the neanthropic races of the upper palaeolithic, but of the big-brained, though ape-like, Neanderthals. His association with a warm fauna also suggests a correlation between a temperate climate and neanthropic features on the one hand, and an extreme climate and Neanderthaloid features on the other. The status of Fontéchevade Man remains

then, for the present at least, enigmatic. He may belong with Piltdown, and possibly also Swanscombe Man, to a separate and eccentric evolutionary line which combined a neanthropic skull-shape with a very primitive and simian type of jaw. Alternatively he may represent a small-brained but, in other respects, nearly or completely neanthropic race or species, which had evolved from a Swanscombe or Heidelberg or other unknown type of stirps. Again, while all the available evidence indicates that this 'Fontéchevade race' succumbed to the extreme cold of the first Würm glaciation, and that western Europe was re-peopled after its passing by immigrants from the East, it is possible that there were some survivors in the warmer Mediterranean regions, who were ancestral to some of the later neanthropic peoples, whose characteristics we now have to consider.

First among them is the Crô-Magnon race,* so named from the rock-shelter near Les Eyzies, where the principal remains were found in 1868, and which is also represented by the skeleton from Paviland, in the Gower Peninsula, South Wales, discovered by Dean Buckland as early as 1823, and by remains from the Grimaldi caves near Mentone, Engis (near Liège), Aurignac and Gourdan (Haute Garonne), La Madeleine and Laugerie Basse (Dordogne), and various other sites, including one in the Chernaia valley near Sebastopol, in the Crimea. The Crô-Magnon man was tall and muscular, with a long, low head, widening somewhat in rear, moderately developed frontal torus, broad face with prominent cheek bones, long thin nose, somewhat prognathous jaws, and massive prominent chin. He bears an obvious resemblance to the most neanthropic of the Mount Carmel fossils, and was most probably of closely related descent; but if in respect of his head shape, heavy brows and massive jaws he still shows traces of his palaeanthropic ancestry, he is typically modern in his big head, thin, aquiline nose and narrow, pointed chin: physically and mentally he was fully the equal of the modern European; and people of very similar type are to be found in western Europe to-day. A second rather less advanced type is represented by the skeleton found at Combe-Capelle (Dordogne) in 1905, which has a smaller, narrower and somewhat higher head, broader nose and rather more prognathism; and it is of relatively short stature. In some respects the skull might suggest a comparison with the Fontéchevade fragments; and it is to be noted that it is probably the earliest in date. The fossil remains from Brno and Předmost in Moravia represent a third type, with heavy frontal torus,

Map IV. Fossil and industrial sites showing evidence



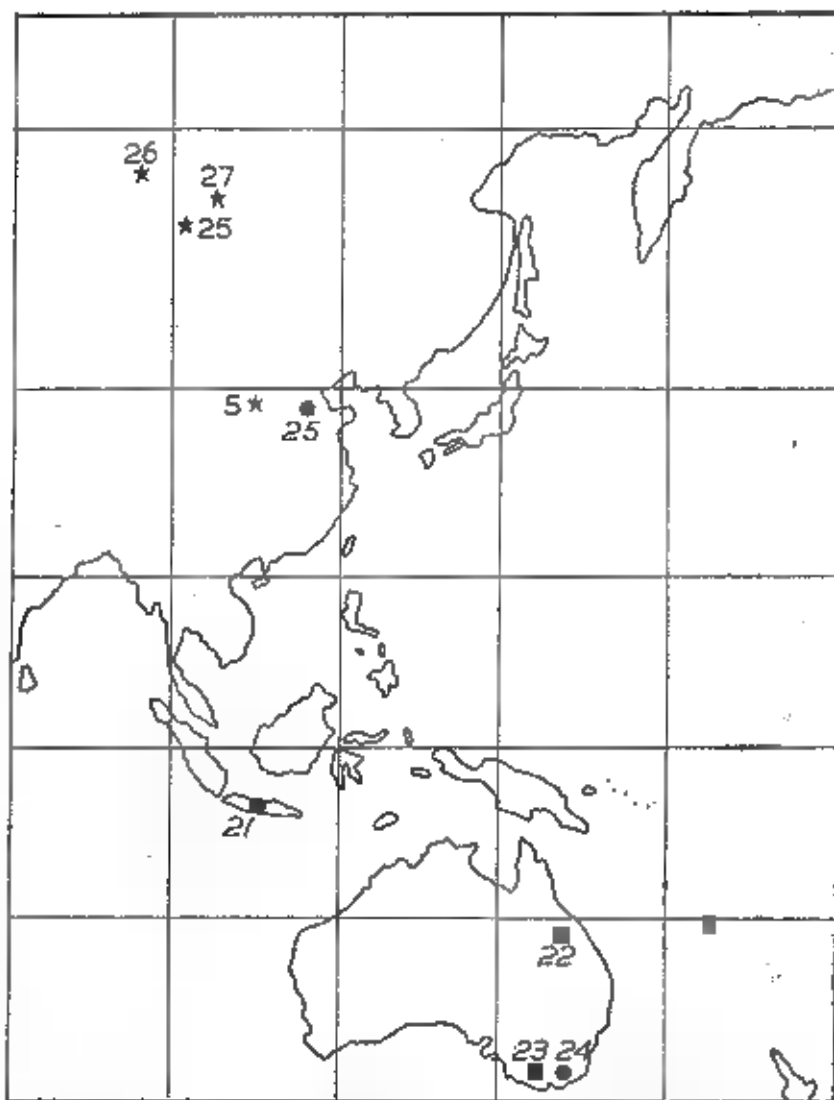
Fossil Sites

- 1 Fontéchevade
- Placard
- Le Roc valley
- Crô-Magnon
- La Madeleine
- Laugerie Basse
- Combe Capelle
- Chancelade
- 3 Paviland
- 4 Grimaldi

- 5 Engis
- 6 Aurignac
- Gourdan
- 7 Chernaia valley
- 8 Brno
- 9 Předmost
- 10 Solutré
- 11 Obercassel
- 12 Afalou bou Rummel
- 13 Mechta el 'Arbi
- 14 Tzitzikama
- Bayville

- 15 Fish Hoek
- Cape Flats
- 16 Knysna
- 17 Springbok
- 18 Barkly West
- 19 Asselar
- 20 Kom Ombo
- 21 Wadjak
- 22 Talgai
- 23 Cohuna
- 24 Kailor
- 25 Choukoutien

of the late pleistocene stages of human development



Industrial Sites

- 1 Yabrud
- 2 Châtelperron
- 3 Audi
- 4 Aurignac
- 5 Shuitungkou river
- 6 Syuren
- 7 Gagarino

- 8 Kostenki
- 9 Borshevo
- 10 Berdysh
- 11 Vestonice
- 12 Willendorf
- 13 Grimaldi
- 14 Mezin
- 15 Timonovka
- 16 Suponevo
- 17 Brassempouy
- 18 Solutré
- 19 Parpalló
- 20 Madrid
- 21 Romanelli

- 22 Creswell Crags
- 23 Kiev (St. Cyril Street)
- 24 Wady Athlit
- 25 Gvardzhiles Klde
- 26 Sulaimani caves
- 27 Mal'ta
- 28 River Yenisei
- 29 Vercholsensk Mts.
- 30 Hamburg
- 31 Swidry
- 32 Sebil
- 33 Gafsa
- 34 Magosi

massive prognathous jaws and in some specimens an occipital bun; but these palaeanthropic characteristics are combined with a high vault and a large, well-developed brain. As among the Crô-Magnon people there is notable sexual dimorphism, and while some female skulls in the reduction of the frontal and occipital ridges and of the dental palate foreshadow as it were the further course of evolution, others approximate to the more 'Australoid' characters of the Combe-Capelle specimen in the narrow, flat-sided shape of the skull, width of the nose and more obvious prognathism. Thus the Brno-Předmost race provides an intermediate series linking the palaeanthropic stage of Eurasiatic mankind, as represented by the Ehringsdorf fossil, with the more advanced Crô-Magnon type, and with the Nordic peoples of to-day, with whom also it may be connected by a more or less continuous cultural series. A fourth type is represented by fossils from Solutré and Placard (Charente), which otherwise resemble the Crô-Magnon type, but have medium-broad instead of long-shaped heads. Long-headedness is a typically primitive character, and the proportion of broad-headed to long-headed people in the total population of the world is certainly far higher now than in prehistoric times. These skulls at Placard and Solutré, and those from among the much earlier Krapina fossils, provide evidence of the early occurrence of broad-headedness as a local modification, and dispose of the old theory that brachycephaly was introduced into Europe by 'neolithic invaders'.

All these four types belong, or can be traced back, to the earlier part of our period; but the fifth type, represented principally by the skeleton discovered at Chancelade (Dordogne) in 1888, belongs to the latter end of it. Chancelade man was of short stature, and had a high, long, very capacious head, full in front and flat at the sides, with slight frontal torus, and remarkable 'keeling' of the top. In this feature especially, as in the general shape of the head and the short legs, there is a marked resemblance to the modern Eskimo race, so that some authors have asserted that the inhabitants of Europe at this time were in fact Eskimoes. There are, however, strong arguments against such a view. In the first place in spite of his admitted Eskimo characteristics Chancelade man seems to have had a European nose, with a high bridge; and the prognathism of the Eskimo jaw is also lacking. Secondly, Chancelade man is linked to the Crô-Magnon race by several fossil remains of late date, which display 'Eskimoid' characteristics, but to a lesser extent, particularly those of a man

and woman from Obercassel (on the Rhine, a little above Bonn), and a female skull from the valley of the Roc (Charente), which displays the characteristic flattening of the sides and 'keeling' of the top. The conclusion seems to be that Chancelade man represents a later modification of the Crô-Magnon race under the stress of the severe climate of the third Würm extreme, and that the similarity to the modern Eskimo race is to be explained in terms, not of genetic connection, but of biological response to similar climatic conditions.

So far the story is a comparatively simple one, and there is general agreement upon it among the authorities. But when we pass from Europe to Africa, uncertainties increase, and there is a rather baffling lack of correspondence between the biological and cultural series, as also between pleistocene fossil types and the racial pattern of modern times. First, then, there are the fossils from Afalou bou Rummel in Algeria, the earliest dated of which closely approximates to the Combe Capelle type with wide nostrils, very long, low-vaulted skull, only moderately massive: a number of remains from later levels have a general resemblance to the Crô-Magnon type, but are more massive, and more primitive. These men of Afalou were tall, broad-shouldered, and had moderately long heads, with remarkably thick bones, high vault, heavy frontal torus, and in some specimens occipital torus as well: like the Crô-Magnon people they had broad faces, disharmonic with their long heads, wide (but not flat) noses, and heavy jaws with prominent chins. This race is represented by a later series from Mechta el'Arbi in Algeria, which tends to be less massive and rugged—that is, more 'modern'; and it seems to survive to-day, further 'reduced', among the Kabyles of Algeria and Guanches of the Canary Islands. If, then, there were any cultural evidence to link these early neanthropic folk of north-west Africa with those of Europe, one would not hesitate to regard them as a further south-western extension of the same stock. But there is in fact no such evidence; for, as we have already seen in the last chapter, this part of Africa pursues an entirely separate line of development during the late palaeolithic of Europe.

The same sort of difficulty occurs in the case of the skull-cap, mandible and long bones of a skeleton found at Boskop in the Transvaal in 1914, and which has been probably dated to the late Pleistocene. Boskop man also shows a general resemblance to the Crô-Magnon type, though some negroid characteristics have been detected, as in the narrowness of the forehead and inter-parietal

depression, while the flatness of the skull is also a palaeanthropic feature. Elliot Smith suggested that we might have here an 'immediate ancestor' of the upper palaeolithic races of Europe. Boule more cautiously left the relationship between Boskop man and the palaeolithic Europeans in doubt; and Keith, while claiming that he was more richly endowed with mass of brain than any other type known to us, favours the view of a parallel development of similar neanthropic types in Europe and Africa.⁴ Other skeletons of generally similar type but of probably later date have been found at Tzitzikama near Port Elizabeth, Fish Hock near Cape Town and near Knysna, midway between the two; and according to Keith the ancestry of the modern Bushmen is to be traced from Boskop through Fish Hock man in terms of the gradual reduction of stature and brain size, and at the same time of the face in relation to the brain. The rather different Springbok type (from the Springbok flats, some fifty miles north-east of Pretoria) is assimilated to the modern Bantu type, though the Bantu-speaking peoples are generally supposed to have reached South Africa in late historic times. A third specifically African lineage has been suggested, linking the Florisbad specimen mentioned in the last chapter with certain 'Australoid' skulls found at Bayville near Port Elizabeth, Mistkraal in Cape Province, Barkly West near Kimberley and Cape Flats near Cape Town, all of which display robust development of the frontal ridges as well as other 'Australoid' or palaeanthropic features, and which are supposed to have their present-day representatives in the existing Koranna tribe of Hottentots.

One rather surprising conclusion about these various fossil types of Africa is that there seems to be less difference between them and the parallel European series than there is between the existing races of Europe and Africa. It is to be noted, however, that some of the modern Bantu-speaking peoples of East Africa do not differ greatly in their skeletal constitution from the early or modern dolichocephalic peoples of Europe. John Roscoe writes of the Bahima or Banyankole: "Many of them are over six feet in height . . . The features . . . are good: they have straight noses with a bridge, thin lips, finely chiselled faces, heads well set on fairly developed frames, and a good carriage; there is in fact nothing but their colour and their short woolly hair to make you think of them as negroids." And again, the Ba-Nyoro "are a tall, well-built race of men and women with finely cut features . . . The men are athletic with little spare flesh, but the women are

frequently very fat and corpulent: indeed their ideal of beauty is obesity, and their milk diet together with their careful avoidance of exercise tends to increase their size."* The 'European' character of these tribes has been ascribed to an admixture of 'Hamitic' blood; but the fossil evidence shows that a similar 'intermediate' type has existed in Africa from the beginning of the neanthropic era, and which may nevertheless have differed as markedly from its European contemporaries in respect of hair and skin-colour as do the present-day Africans from theirs. In other words the supposed 'Australoid' characteristics of the Combe Capelle type, and Crô-Magnon characteristics of the Boskop and Afalou bou Rummel types, depend to a considerable extent on non-skeletal features about which we have no information. If indeed the earliest neanthropic peoples of both Europe and Africa were newly arrived immigrants from some Asiatic centre of dispersal, such climatic differentiation would hardly have had time to operate. But there is no clear evidence from Africa, as there is from Europe, of such a migration. Rather Africa pursues, especially in the upper palaeolithic age, its own separate course of development; and in the absence of positive evidence to the contrary, we may assume that, apart from an occasional influx of immigrants by way of Suez, or perhaps the Bab-el-Mendeb straits, the evolution of mankind from a palaeanthropic stirps also followed a separate and parallel course. Whether any particular late pleistocene race, such as that of Afalou bou Rummel, was immigrant or indigenous there is insufficient evidence to decide.

In one of the Grimaldi caves, named *La Grotte des Enfants*, were found the skeletons of an old woman and a youth, buried with coronels of *Nassa* shells round their skulls, and differing markedly from other fossils of Crô-Magnon type found at Grimaldi. They are short, with relatively long extremities, and have large, high and very long heads, well developed foreheads with no superciliary torus, broad, flat noses, projecting jaws and very large teeth. According to some authorities they are negroids, and resemble the modern Bushman and Hottentot peoples; but others, including Keith, Elliot Smith and Morant, consider them only an extreme variety of the western neanthropic stock. Owing to the partial crushing of the skulls their original form is itself a matter of some doubt; but it seems at least that these skeletons have a good deal in common with that found at Asselar (250 miles north-west of Timbuctoo) in 1927, which probably dates from near the end of the Pleistocene, and which also combines a high, narrow head with

flat nose, large teeth, prognathic jaw and rather undeveloped chin: probably of similar character are the fragments of skull found by Sandford at Kom Ombo, in the Nile valley north of Aswan, and dated also, from the associated industry, to the concluding stages of the Pleistocene. In judging the character of this group we may bear in mind the following points: first, that the negro type is not primitive, but rather highly specialized, in respect of his narrow head with absence of frontal torus and often bulging forehead, as in respect of his woolly hair, everted lips and other non-skeletal characteristics; secondly, that the long-headed wavy-haired brunet or Mediterranean type is in some respects intermediate between the North European and negro types, especially as it is represented by the earliest predynastic Egyptians, whose ancestry the Kom Ombo skull is taken to represent; and thirdly, that these earliest Mediterraneans, like the Central African negroes, have no obvious line of descent from any of the fossil types previously considered, except perhaps that of Fontéchevade. It seems possible then that we have in this group representatives of an early neanthropic stock native to the Mediterranean-Sahara region, originating by a separate line of evolution, as represented by the Fontéchevade remains, and partly ancestral to the modern Mediterranean Race and to the African Negroids. And possibly, again, the Combe Capelle type, in Europe and at Afalou bou Rummel, represents a mixed or intermediate race between the earlier Fontéchevade-Girmaldi line and the later arriving Eurasiatic races of Crô-Magnon, Brno-Předmost and Afalou bou Rummel. But these are only conjectures.

Turning now to the region of South-East Asia, we find fairly clear evidence of the continuing evolution there of a separate Far Eastern branch of mankind from the palaeanthropic stage represented at Ngandong. Skulls from Wadjak, Java (discovered by Dubois in 1925), from Talgai, Queensland (found in 1884), Cohuna, near the Murray River in northern Victoria (found in 1925), and from Keilor, near Melbourne (found in 1940), all represent an intermediate form between the Ngandong and modern Australian types, and give evidence of the peopling of Australia before the end of the Pleistocene. The Keilor fossil has indeed been attributed to the last interglacial, which would make it earlier in date than any other known neanthropic specimen, except perhaps the Mount Carmel fossils. But in view of the uncertainty of the geological correlations between Australia and Europe, and of the great body of evidence that the course of human

development in this region lagged behind its course elsewhere, this attribution must remain extremely doubtful.

Finally, in the upper cave at Choukoutien, in a horizon which is either very late Glacial or early post-glacial, and in association with an industry which combines tools of the early palaeolithic chopper tradition with others of more specialized type and upper palaeolithic affinities, also with numerous ornaments of coloured stones, shells and pierced teeth of stags and foxes, have been found several skeletons of children and adults. Among them is that of an old man described as of the Crô-Magnon type but more primitive, with heavier frontal torus, and some facial resemblance to the present-day Mongol type; also two female skulls, one resembling the modern Eskimo type, and the other the Melanesian of New Guinea. Are these people descendants of the same Far Eastern stock to which belonged the primeval inhabitants of the lower cave? The total absence of intermediate forms at Choukoutien itself, and the lowly progeny of its southern branch in Java and Australia, make such a descent unlikely. On the other hand, if these late occupiers of the cave were immigrants from the West, we might expect them to have brought with them a more definitely upper palaeolithic equipment. Nor is their relation to later historical peoples any less doubtful. According to Weidenreich they were migrants on their way to the New World, and so ancestors of the American aborigines or Amerinds. It is at least most unlikely that they were ancestral in any degree to the modern Melanesians, or to the historical Chinese, who first appear with the painted pottery culture in Kansu and Honan about the time of the opening of the historic era in Mesopotamia and Egypt. The truth is that the story of China in palaeolithic times is at present full of gaps and uncertainties.

A more general point, however, arises, in connection with these Choukoutien fossils. It is remarkable that the three racial types represented there seem to parallel those of Europe, as represented by the fossils from Crô-Magnon, Grimaldi and Chancelade; and this correspondence illustrates the prevailing variability or plasticity of the human race, leading to frequent parallelisms and repetitions, such as make any racial classification on a genetic basis extremely hazardous. G. M. Morant has shown that the fifty-two upper palaeolithic skulls from Europe known at the time of his analysis are no more variable among themselves than are those of modern Europeans, and that they have certain common

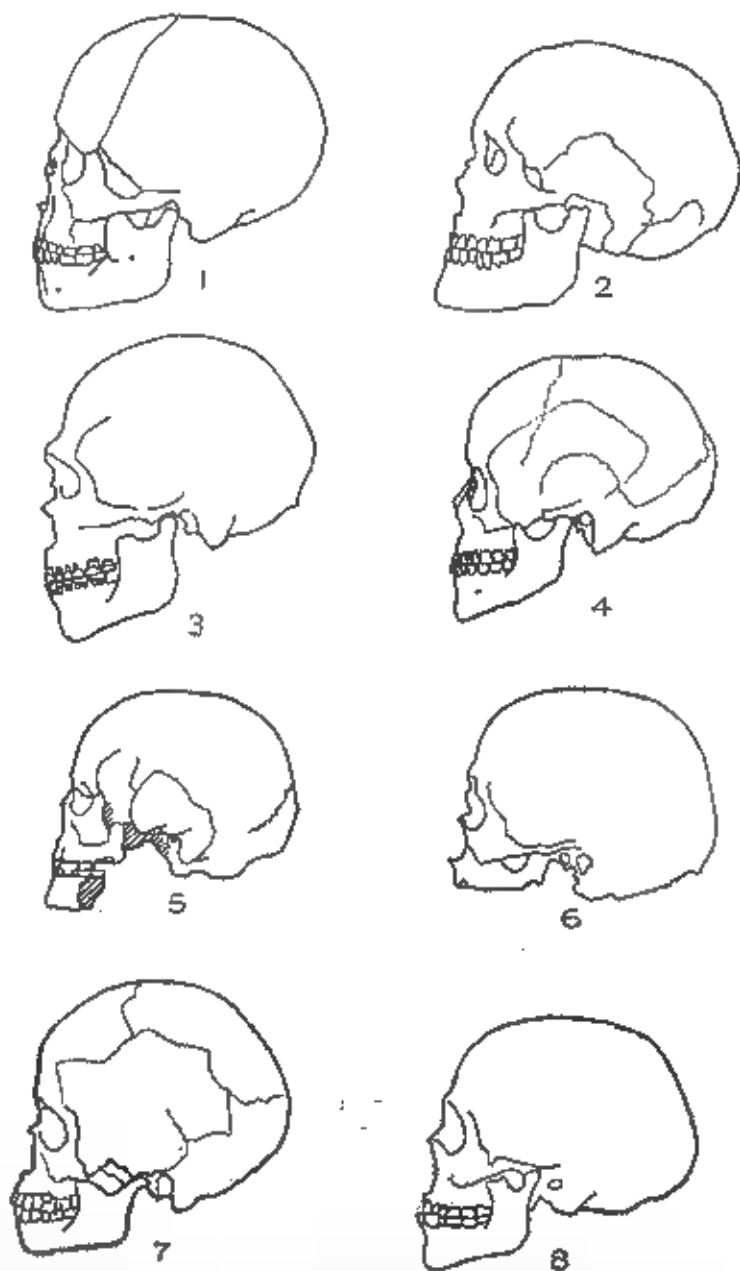


Fig. 14. Neanthropic skulls: (1) Combe Capelle skull, after Klantsch; (2) Crô-Magnon type skull from la Grotte des Enfants, Grimaldi, after Verneau; (3 and 4) male and female skull from Piedmost, after Keith; (5) Placard skull, after Hamy; (6) Chancelade skull, after Boule; (7) young man's skull from Grimaldi, after Verneau; (8) Asselar skull, after Boule. About $\frac{1}{2}$ scale

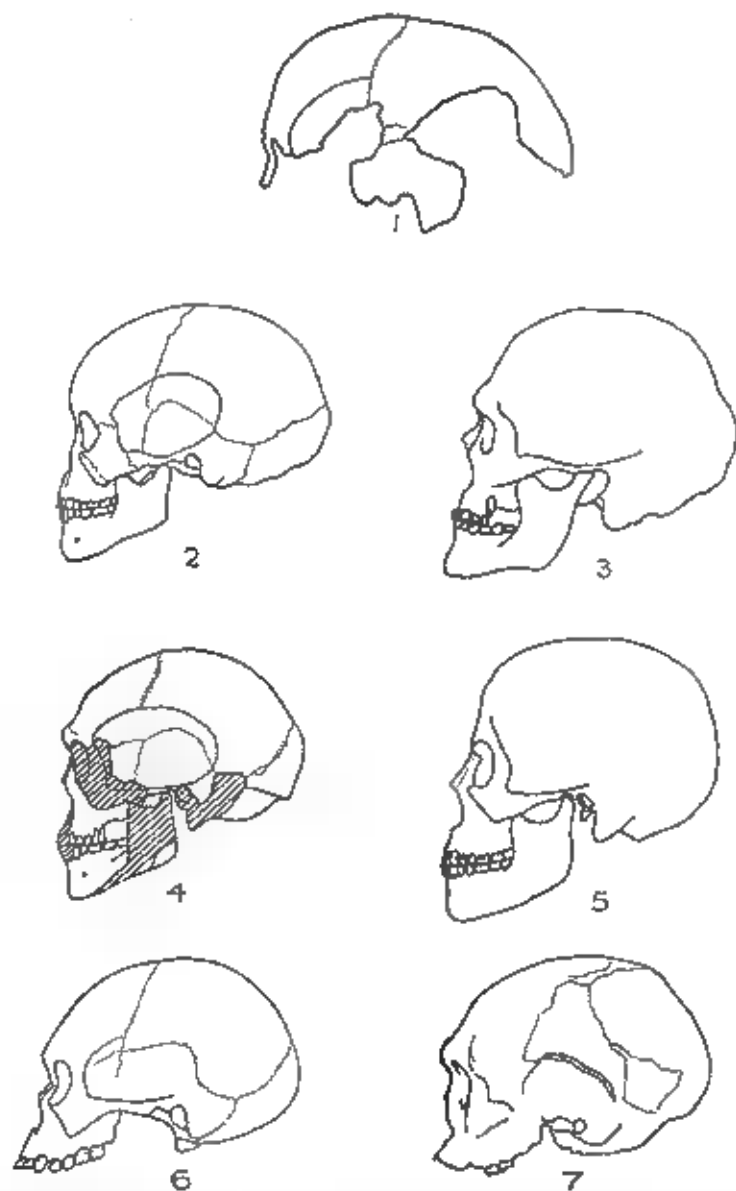


Fig. 15. Neanthropic skulls: (1) Boskop skull-cap, after Keith; (2) Fisk Hoek skull, after E. Smith; (3) skull from Mechtel el Arbi, after Boule; (4) Cape Flats skull, after Drennan; (5) Springbok skull, after Broom; (6) Talgai skull, after Keith; (7) Wadjak skull, after Dubois.
About $\frac{1}{2}$ scale

characteristics which distinguish them from the latter: these include large brain-case, wide, heavy jaws, and marked sexual dimorphism.' But these are no less general characteristics of the early neanthropic skulls from Africa and Asia as well. There is in fact a 'family likeness' between all, or nearly all, the early neanthropic types or races of mankind, which is not shared by many of their modern successors in the same regions. Yet the evidence is all against deriving these widely scattered groups from a single neanthropic stirps. The conclusion is rather that they represent the same evolutionary stage of several separately evolving races or families, and that physical similarity can only be taken as proof of common ancestry within a limited field of time and space. A final point in this connection: that the difference between the two female skeletons at Choukoutien and that of the old man may be due not so much to racial difference or admixture as to sexual dimorphism, such as we find to a marked extent in the Mount Carmel caves, and elsewhere.

The upper palaeolithic industries are characterized by tools of the blade and graver type, in contrast with the points and scrapers of the mid-palaeolithic; and there is also an increasing use of bone and ivory. Moreover, the surviving material remains of the period include not only tools but an abundance of other human products, so that we are justified in speaking, not merely of industries, but of cultures; and the growth and succession of these cultures can be traced, albeit vaguely and uncertainly, in semi-historical terms of local human movement and activity. So in this chapter we move up to a higher level of knowledge and humanity; and though, measured on the chart of geological time, the upper palaeolithic appears as a minute fraction of the Glacial Age, in its significance it bulks larger than all the earlier unfathomed aeons of the past together. Yet in spite of the changes there is continuity with the past. Neanthropic man at his first appearance is already 'heir of all the ages', and both in its climatic oscillations and in other respects the upper palaeolithic seems to recapitulate the pattern of the whole series. It opens at the beginning of a dry, relatively mild 'retreat', though the European climate was still very cold; and this is followed by (2) a second extreme of glaciation (Würm II), which is, however, less extreme than the first, (3) another short retreat, (4) a final return of the cold (Würm III), and (5) a rapid rise of temperature and ending of the whole Glacial Age. As in previous ages the

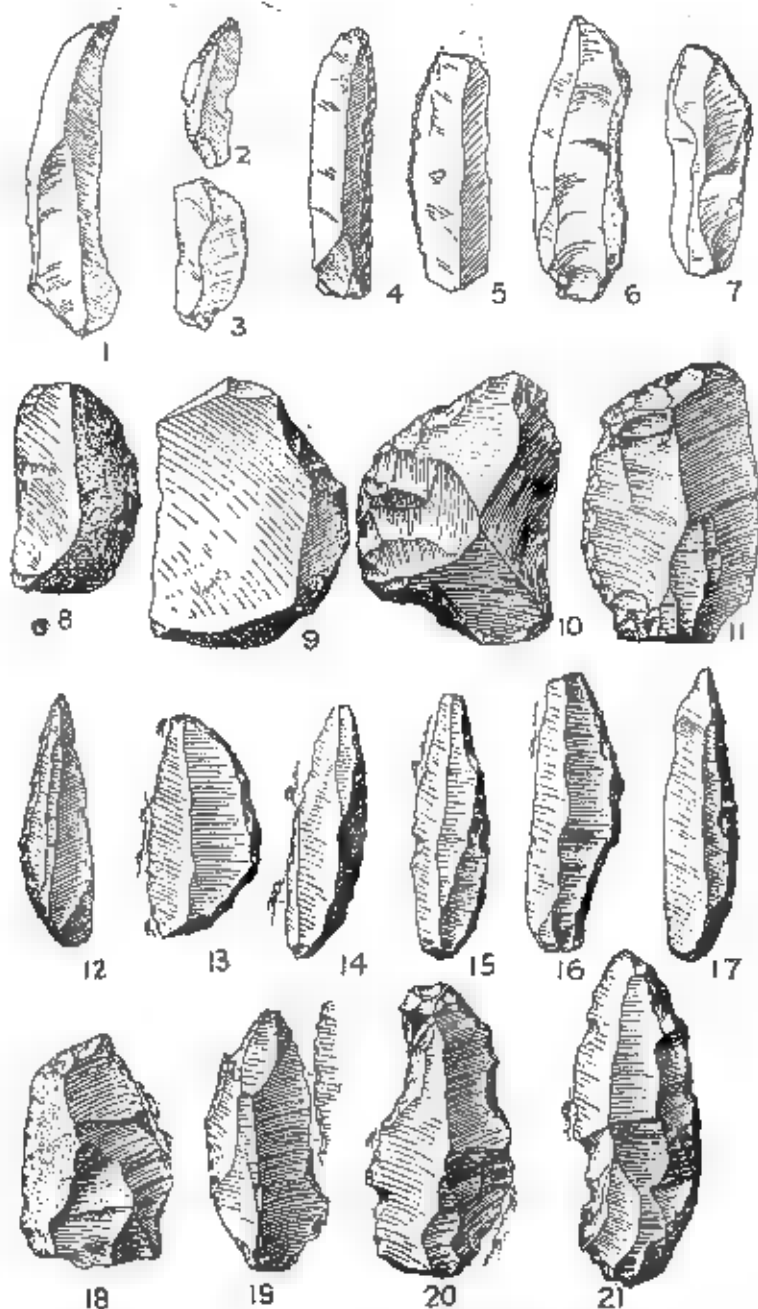


Fig. 16. Early blade tools: (1-3) from the Kinangop Plateau, East Africa, after Leakey; (4-7) from an upper Acheulian layer at et-Tabûn, Mount Carmel, after Garrod; (8-11) from a late Mousterian layer at Laussel, Dordogne, and (12-21) from a Chatelperronian layer at the same place, after Lalande and Bouyssonie. $\frac{1}{2}$ scale

migrations and cultural successions were conditioned throughout by the rhythm of climatic change; and we may note how, as in historic times civilization, after centering through some four millennia in the Near and Middle East, shifted at length to western Europe, so the prehistoric savage hunting culture, after centering probably through all its earlier stages in the central belt, reached its culmination during the late palaeolithic in the west-European regions of central and southern France and northern Spain.

The earliest blade tools are probably those found in the late Acheulian levels of the et-Tabūn cave in Palestine, intercalated between a Tayacian and a final Acheulian layer, but also occurring sporadically in the lower part of the Acheulian, as well as in the long Levalloiso-Mousterian series overlying it. A similar intercalation of blades into an Acheulian series has been found in the rock-shelters at Yabrud near Damascus by the German archaeologist Alfred Rust. An association of blades with upper Acheulian had previously been reported by Dr. Leakey in Kenya, and was explained by him as resulting from the contact of the Acheulian and Levalloisian traditions. Even in western Europe Breuil has noted the occurrence of blades in Levalloisian levels, and MM. Lalanne and Bouyssonie report their presence in a lower Mousterian level in the station of Laussel. Here — elsewhere there is a choice between diffusion from a single source and parallel development in several separate regions as a principle of explanation. But Leakey's particular form of explanation does not fit the facts in Palestine and elsewhere; and the generally accepted theory seems to be that the blade-tool tradition originated in some Asiatic centre east of Palestine, some time earlier than the spread of the Mousterian tradition through Europe and Hither Asia, and that the sites in Palestine and Kenya represent a first movement of westward expansion. This supposition may also help to explain the puzzle of the Choukoutien industry, the upper palaeolithic characteristics of which could be attributed to influences from this central Asiatic region penetrating at an early date to northern China. In any case the upper palaeolithic tradition appears in origin as a contemporary rather than as a successor of the mid-palaeolithic, which it gradually interpenetrated and finally superseded.

A blade was made on a long, narrow flake, the removal of which probably required some special technique, such as binding the core or nucleus with skin or fibre, to neutralize the effect of the transverse vibrations set up by the blow, which would other-

wise have snapped it before it was detached. One side of the flake was then blunted by vigorous secondary chipping, while the other side was left as a sharp, straight edge. In some of its later forms the blade was hafted, and tended to approximate in form and function to the point, but in its original design it was intended to provide the worker with a haftless knife-blade, the blunted back being curved to fit the finger, and allow pressure with it on the cutting edge. The other typical tool was the graver or *burin*, which was a long flake, given a narrow, transverse chisel-like edge, more or less at right angles to the plane of the flake by blows struck downwards from the working point. In some cases the working edge thus produced was hollowed out like a gouge. Gravers were used for working in wood, stone, bone, horn and ivory, and with the later enrichment in industrial material and increase of handicraft skill they developed a quite bewildering variety of forms, each adapted to some special purpose, and as nice in their differences as the dozen or more clubs of the modern golfing specialist.

Five stages in the development and expansion of the blade and graver industries may be distinguished, the first of which is represented by the finds already mentioned in Palestine and Kenya and western Europe. The second stage is found, succeeding industries of mid-palaeolithic type, in much the same regions, that is, in Palestine, Kenya, France, and possibly also in Poland, while in other regions, such as central Europe, North and South Africa, and the eastern shores of the Black Sea, the contemporary industries are either wholly mid-palaeolithic or show a mixture of middle and upper forms. In both these stages the blades are of the Châtelperron type (so named from the cave of Châtelperron, Allier), with the cutting edge more or less straight and the back curving forward to a point; but those of Palestine are more delicate and finely worked than those found in Kenya or western Europe; and in the latter region the Châtelperron is preceded by an Audi stage (named from the Audi rock-shelter near Les Eyzies), in which thick, coarse blades, or curved points with one side blunted, ■■■ combined with scrapers and hand-axes so poorly made as to have ■■■ almost eolithic appearance. The relation of these industries, and the stages of development in western Europe, suggest a gradually increasing infiltration of cultural elements from Asia, in the first stage perhaps through ■ more or less haphazard transmission of cultural objects from one wandering group to another, and in the second through the arrival of new

elements of population, as represented perhaps by the Combe Capelle fossil, which is the earliest in time, as it is in some ways the most primitive morphologically of the neanthropic types. Yet it is an awkward fact that these supposed early migrants have left no trace of their passage through central or southern Europe; and the archaeological material from France, with its transitional stages and late recurrence of mid-palaeolithic forms, gives little indication of any fundamental break in the cultural tradition, such as we should expect when the Neanderthal was replaced by a neanthropic population. East Africa we may suppose to have been linked to Asia through Arabia, though here also the recent exploration in the Hadhramaut by Miss G. Caton Thompson and Miss E. W. Gardner has yielded wholly negative results. In any case this early contact between the two continents was not continued, and during the greater part of the late Glacial Age Africa pursued its own course of development.

The third stage is named Aurignacian, after the type-station of Aurignac, Haute Garonne: in the older parlance the second and fourth stages were also included under this term, and the third was called 'Middle Aurignacian'. It is characterized by a wide variety of 'keeled' scrapers, shaped rather like a boat, with one side flat and the other keeled or ridged and the working edge at one end, of 'beaked' and other kinds of gravers, and by a 'fluting' technique by which a series of long, shallow, parallel flakes were removed, with results that have been compared with the fluting on a classical column. In the West there was also an increasing use of bone, and particularly of the split-base bone point: this tool, some four inches long, with a sharp point at one end and a broad butt at the other, generally divided by a split parallel to its greatest breadth, was probably the first attempt at a bodkin, the split in the base functioning like an eye. The Aurignacian industry is traceable from France right across Europe, through Lower Austria, Hungary, Roumania and Bulgaria, in the Crimea and Transcaucasia, Anatolia and Palestine, where it is especially abundant and covers a long period of time. Its original home is considered to have been somewhere further East, perhaps the Iranian plateau; and Breuil has suggested the presence of the same industrial tradition in the palaeolithic stations of the Shuitungkou river in North China explored by P. Teilhard and E. Licent.⁸ Whatever its local Asiatic origin, and its relation to the earlier original centre of the blade and graver tradition, there can be little doubt that its westward spread from Hither Asia



Fig. 17. Aurignacian tools from Mughareet el-Wad, Mount Carmel, after Garrod; (1-4) graters; (5-9) scrapers; (10-13) points. ■ scale

into Europe was due to a large-scale human migration, and that the Crê-Magnon race belonged ■ this new stock of neanthropic invaders. The route of invasion may have depended upon the fact that it took place during the second extreme of the Würm glaciation, when a land-bridge probably connected the Balkans with Asia Minor.⁹

The fourth stage is called Gravettian, from La Gravette (Corrèze), the type-station of the characteristic Gravette blade, which was a finer version of the Châtelperron, with its two sides almost parallel for the greater part of their length, and the ends either cut off square, or with a sharp point at the tip and often at the base as well. Many of these blades were obviously intended for hafting, and in the eastern area were provided with a shoulder which turned the lower part into a tang: in the West the shouldered point only appears in the later phase, named Font-Robert after the type-station, also in Corrèze. Though the stone industry of this stage is called Gravettian, the culture-complex to which it belongs might perhaps more suitably be called South Russian, after the region of its most probable development. The bearers of the earlier Aurignacian tradition reached Transcaucasia and the Crimea, presumably moving round the shores of the Black Sea between the glaciated heights of the Caucasus and then somewhat lowered shore-line. According to the Russian archaeologist Bontch-Osmolovski, this Aurignacian of the Crimea, as represented in the cave of Syuren I near Sebastopol, was directly ancestral to the earliest Gravettian stations at Gagarino, Kostenki (which means 'bone village') and Borshevo on the upper Don, and Berdysh in the Dnieper valley. But the temporal succession is uncertain, and the earlier Châtelperron stage in Palestine already shows a tendency to Gravettian forms; so possibly a new cultural movement took place from south to north across, or round, the westward thrust of the 'Aurignacian' migration. In any case South Russia seems to have been the principal area of characterization. We may suppose that, with the retreat of the ice after the second Würm extreme, new territories of cold steppe were opened up, and presently occupied by vast herds of reindeer, mammoths, bison, wild cattle and horses; and this opening up of rich new hunting grounds led to a corresponding northward expansion of humanity, and a release of energy leading to a new cultural advance. It is to be noted that the Russian stations are on the upper or middle sections of the Black Sea rivers. Probably the lower reaches were marshlands unsuitable for

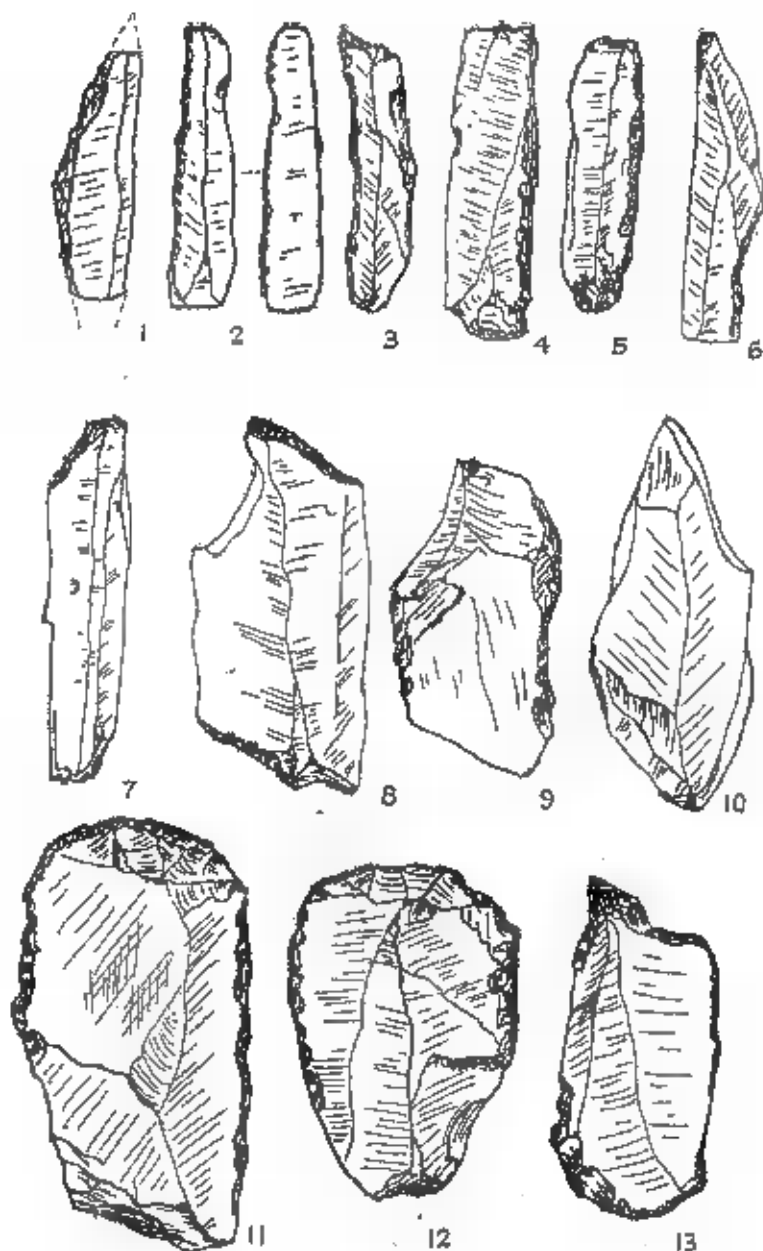


Fig. 18. Gravettian tools from Borshevo, South Russia, after Sawicki: (1) point; (2-5) blades; (6) shouldered blade; (7-10) gravers; (11 and 12) scrapers; (13) combined graver and scraper

occupation, and the steppe area was a comparatively narrow belt of country lying under the marginal foehn winds of the ice-sheet.¹⁰ But laterally it stretched for thousands of miles, and led into the heart of Europe and Central Asia.

The Russian or Gravettian phase is itself divisible into several regional developments. The first is represented by the Russian stations already mentioned, and by those at Vestonice in Moravia, Willendorf in Lower Austria and Grimaldi in Italy, the second by a group of Russian stations on the Desna river in northern Ukraine—Mezine, Timonovka and Suponovo—and which are linked to the Moravian station of Předmost. Thirdly there is the 'classical' region of western Europe. But here we have to note that the patient researches of M. Peyrony in Perigord have emphasized the close relationship of the new Gravettian with the earlier Châtelperron tradition, or indeed at Laugerie Haute the continuous evolution of one from the other; and he has concluded that, in this region at least, there were two separate industrial traditions evolving side by side, one the Aurignacian, and the other the Châtelperron-Gravettian, to which he has given the name Perigordian. His conclusions have not been fully accepted by other authorities; and it seems possible to reconcile them with the idea of successive migrations of culture to the West, if we recognize (what indeed has always been accepted) that the Aurignacian (which is the older 'Middle Aurignacian') represents the intrusion of an alien culture into the 'natural' sequence of Châtelperron into Gravettian, and that the contact of peoples and cultures produces all sorts of complex eddies and cross-currents. Thus it seems equally possible that some of the earlier bearers of the Châtelperron tradition may have survived among the immigrant 'Aurignacians', and that some pioneers of the more evolved Gravettian may have arrived in Aurignacian times. The first possibility is supported by the development in the West of the non-shouldered Gravette blade and later transition to the shouldered form, the second by the presence in Aurignacian levels at Sireuil (Corrèze) and Brassempouy (Landes) of female statuettes, which, as we shall see, are typical elements of the South Russian culture-complex.

The fifth phase is the Solutrean, so named from the station of Solutré near Mâcon on the Saône, which introduces a much more radical break in the industrial tradition; for while Aurignacian and Gravettian tools are characterized by their 'steep', angular trimming, and long, narrow grooves, the typical Solutrean piece

is a flat, leaf-shaped blade or point, trimmed all over by a new technique of pressure-flaking, which makes possible the removal of very fine, shallow flakes or scales. In their developed form the Solutrean laurel-leaf and willow-leaf points are marvels of delicate craftsmanship, so thin as to be translucent; and the thin scales have been split off with the greatest regularity right up to the point, so as to produce an even edge of razor-like sharpness. The extreme delicacy of some examples suggests that they were never intended for practical use, but were 'votive models' made to be buried with some dead leader. It is remarkable too that these blades, in the working of which the palaeolithic flint industry reached its highest point of perfection, were made with points at each end; for this shape is clearly unsuitable for hafting, and is perhaps best explained as a concession of utility to some magico-religious tradition. However that may be, the typical Solutrean blades were certainly used for lance or javelin heads, many of the later types being shouldered, that is, provided with a tang for hafting.

It was at one time supposed that the industry originated in Hungary, and spread thence towards the West; but recent discoveries, and especially the work of Professor Pericot García at Parpalló (near Gandia, in the province of Valencia), have revolutionized our ideas on the subject.¹² Here, in this south-eastern corner of Spain, has been found a series of upper palaeolithic industries, commencing with the Gravettian and passing through all stages of the Solutrean, the latest of which includes, together with typical laurel-leaf and willow-leaf points, a number of finely-worked tanged and barbed arrow-heads, some S'baikian-like points, and one or two microlithic graters. Moreover a number of stations outside Madrid have yielded a 'Spanish Mousterian' or Matritian which exhibits S'baikian or Aterian influences, as well as later Gravettian and Solutrean industries; while Solutrean industries have also been found in various stations along the coast of Almeria, Murcia and Catalonia in which the ordinary laurel-leaf is replaced by a smaller tanged point, intermediate between the former and the tanged and barbed arrow-head. Finally, we may note that the Solutrean of Parpalló is associated with a quantity of sandstone slabs, engraved or painted with figures of animals, which compare on the one hand with the earlier works of the Franco-Cantabrian school, and on the other with certain much later North African petroglyphs. It seems likely, then, that the Solutrean, instead of originating in central

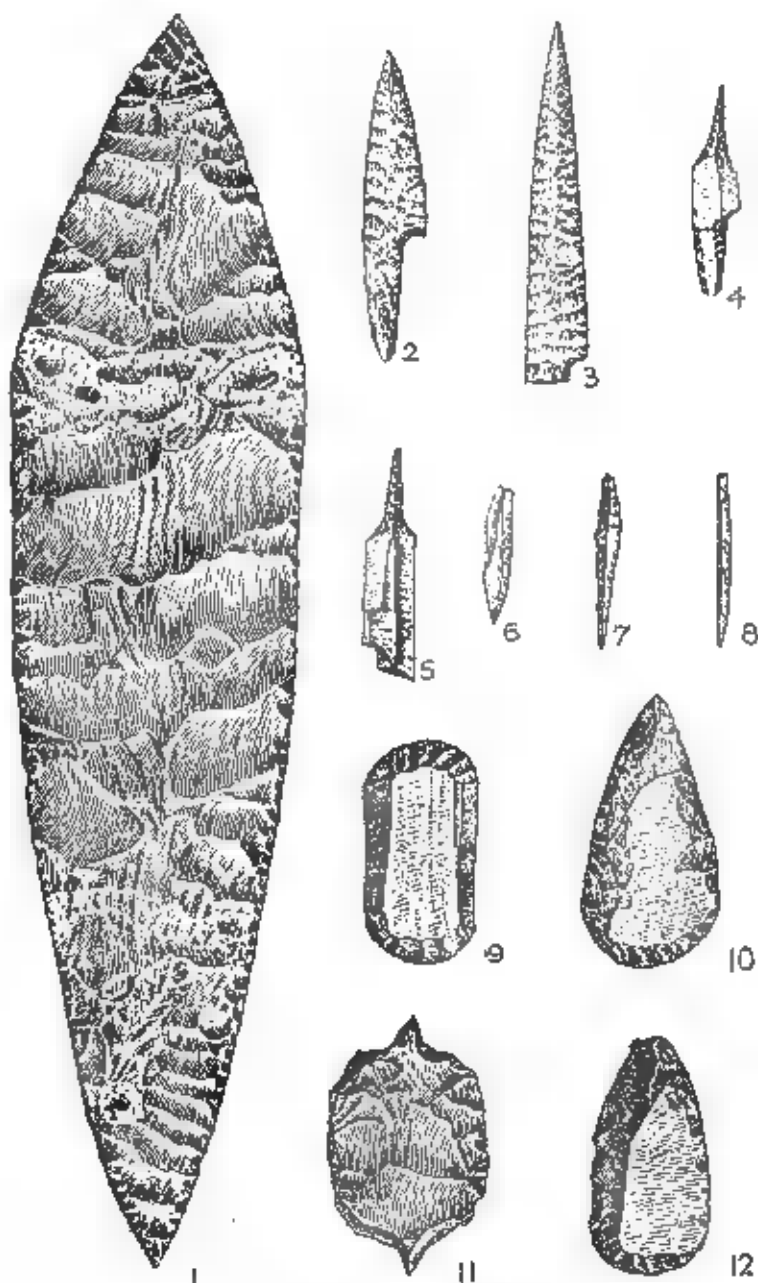


Fig. 19. Solutrean tools and weapons, after de Mortillet: (1) laurel-leaf point; (2-4) tanged or shouldered points; (5-8 and 11) borers; (9, 10 and 12) scrapers. $\frac{1}{2}$ scale

Europe, was of African derivation, and had its earliest development in south-east Spain, perhaps through contact of the Aterian with the Gravettian tradition penetrating from the North. And this conclusion undoubtedly fits in with the wider typological picture, since the Solutrean point has obvious affinities both with the earlier Mousterian and S'baikian, and with the later typically African industries such as the Still Bay, and the neolithic of Egypt, which, in the case of certain lance-heads and daggers, rivals, but perhaps hardly exceeds the finest palaeolithic examples of pressure-flaking: in the European upper palaeolithic series on the other hand the Solutrean is typologically intrusive. Because in the past we have tended to look at all industrial typology in terms of western Europe, the late African industries have been called 'pseudo-Solutrean', and Burkitt has argued that contact between an upper palaeolithic and earlier flake industry leads 'naturally' to the development of the laurel-leaf point. But it now appears that the flat point, finely trimmed by pressure-flaking, is rather 'typically African', as the backed blade is 'typically Eurasiatic', and it might be more logical to call the Solutrean 'pseudo-Still Bay' than the other way about.

This new view of the origins of the Solutrean tradition raises some further points of interest. One is that Spain is seen to be, as Obermaier had previously claimed, a 'region of transition' between Africa and north-west Europe; and this means that there must have been intercourse by sea across the straits of Gibraltar. Evidence of the building of boats or rafts in palaeolithic times is indeed wholly lacking; but that, by itself, is no proof that building did not take place; and the industrial evidence requires us to assume that it did. It seems possible indeed that there was communication not only across the straits of Gibraltar, but coast-wise along the Mediterranean shores of Spain and France and Italy. Such communication might help to explain such puzzles as the Spanish and Azilian affinities of the engraved and painted slabs found at Romanelli (on the extreme south-eastern tip of Italy, near Otranto), and even the development of the micro-lithic technique and origin of the Capsian.¹² Secondly there is the strange fact that the barbed arrow-head, which was the characteristic product of the Aterian, and is associated with the Solutrean at Parpalló, failed to establish itself in the European upper palaeolithic. The small tanged Solutrean point of Catalonia and point with concave base from Cantabrian Spain, and some of the Font Robert points from France, represent various

intermediate forms between the Aterian-Parpalló arrow-head and the shouldered Gravette or flat leaf-shaped Solutrean blade; and some of these may have been used as arrow-heads. But there is no evidence that the bow and arrow were generally adopted in Europe until the mesolithic age. And this is no less true of the greater part of Africa, where the widely spread Still Bay is equally innocent of the barbed, tanged point, except, strangely, in its most southerly extension in the Cape Province. It is impossible to explain this neglect in terms of differing environment or economic stages: it can only be explained, it seems to me, in terms of specific cultural and magical resistances to outside influences, and the innate conservatism of the human mind. A third point is that we shall have to abandon, it seems, the old idea of a 'Solutrean invasion' of the West. The association of a 'proto-Solutrean' industry in Hungary with the Brno-Předmost racial type, and with evidence of cannibalism, and the presence of cranial vaults cut and trimmed apparently to make drinking cups in Solutrean levels at Vestonice and at Lacave (Lot) and Placard (Charente), as well as the rather sporadic distribution of Solutrean stations in the West, and the very character of the deadly, razor-sharp Solutrean blade, all suggested the idea of an invasion of the West by fierce warrior bands, who seemed to prefigure as it were the later bands of Nordic barbarians who, armed with their distinctive weapon the sword, came sweeping out of the northern plain upon the civilized countries of the Mediterranean and the Near East. But it now seems more likely that the Solutrean phase was due, primarily, to an invasion of technical ideas rather than of peoples, and that the 'proto-Solutrean' stations in Hungary and Moravia are peripheral rather than original. That there were tribal movements and invasions of territory during the Solutrean phase is most likely, and the laurel-leaf and later shouldered Solutrean spear-head may well have been used against human enemies. But that there was a 'Solutrean race' is one of the notions we must discard as out of date.

After the Solutrean episode follows the long final phase of the upper palaeolithic, in which separate local cultures develop all over Europe and a great part of Asia. Of these the best known and most vital was the Magdalenian (named from the station of La Madeleine in the Dordogne) of central and southern France and northern Spain, with extensions into central and south-eastern Spain and south-west Germany. Others were the Creswellian of England (from Creswell in Derbyshire), what Obermaier calls

an 'epi-Aurignacian' in south-eastern Spain, ■ Gimaldian in Italy, two forms of degenerate Gravettian in South Russia, one represented by later deposits at Kostenki and the other by late deposits at Borshevo and at St. Cyril Street, Kiev, and the Aditition of Palestine (named from the wady Athlit near Mount Carmel); and to these might perhaps be added local developments of the Gravettian in Transcaucasia (cave of Gvardzhiles Klde) and Kurdistan (caves of the Sulaimani district), and a Siberian industry, of which the earlier phase is represented by the station of Mal'ta near Irkutsk, and the later by stations on the river Yenisei and in the Vercholensk Mountains. This Siberian industry, though culturally linked to South Russia through the female statuettes found in association with it, seems to belong to a separate Siberian or central Asiatic tradition; for its stone tools display a mixture of middle and upper palaeolithic forms, and it includes bone objects which have no known parallel. It has indeed been argued, by A. C. Blanc,¹² that the Siberian industry was the original, or one of the originals, from which the upper palaeolithic industries of Europe were derived, the oncoming of the second Würm extreme driving the hunters westward as Siberia became uninhabitable; but the climatic relations of Siberia to Europe and Hither Asia make it more probable that it was a late degenerate form of the upper palaeolithic, the survival of Mousterian forms, as of a primitive fauna in these regions, being evidence of an outlying position rather than of priority in time. Lastly, with the final retreat of the ice, there developed the Hamburgian of North Germany and the Swiderian (from the station of Swidry) of Poland.

Most of these regional industries show a falling off in technique, and many of them a tendency towards the microlithic forms characteristic of the following mesolithic age; and these forms were more fully developed in Africa, where, as we have already noticed, the early introduction of the blade tradition led to no such development as in Europe, but where microlithic industries begin to appear towards the close of the Glacial Age. Such are the Sebilian of Upper Egypt, named from Sebil near Kom Ombo, the Capsian (from Gafsa near Tunis), and Oranian (from Oran) of North Africa, and the Magosian (from Magosi, Uganda) and upper Kenya Capsian¹⁴ of East Africa. At one time indeed the Capsian of North Africa was regarded as the parent of the Chatelperronian of France. The investigations of Professor Vaufreyc have now demonstrated its comparative lateness (though his

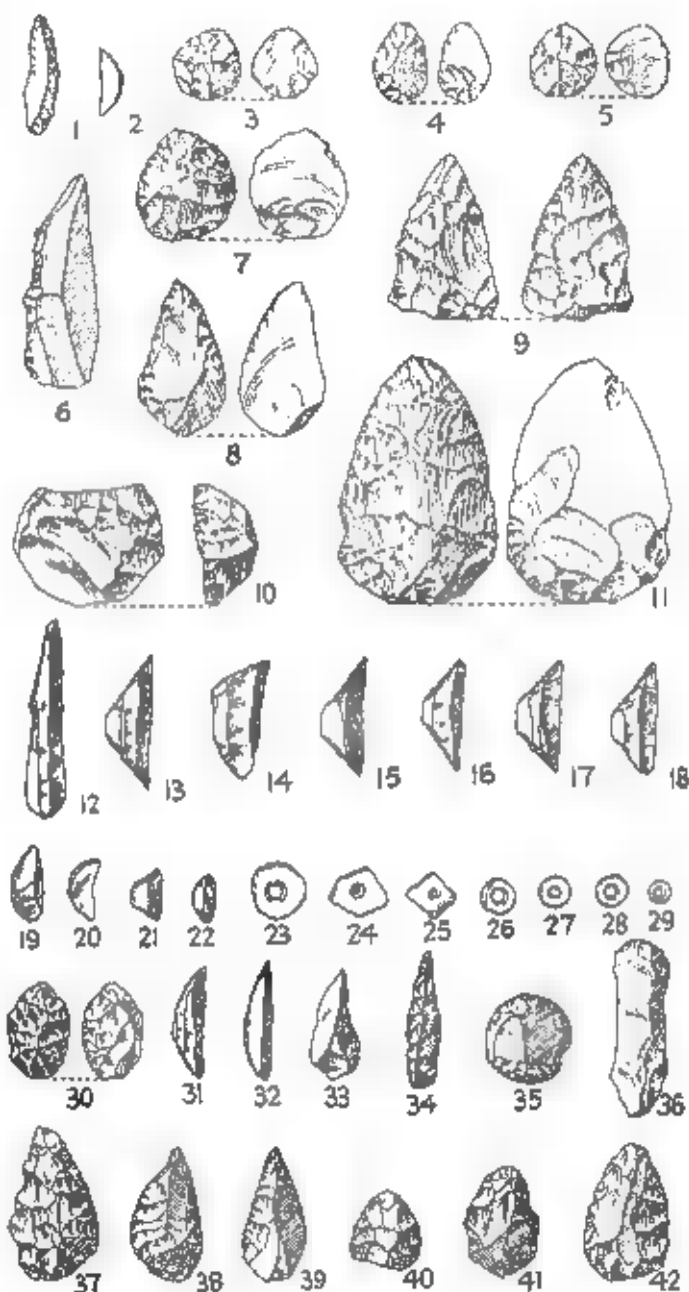


Fig. 20. (1-11) Still Bay tools from East Africa; (12-18) Capsian microliths from North Africa; (19-42) Magosian tools and ostrich shell beads from East Africa. After Leakey. ▮ scale

placing it quite at the end of the Glacial Age is perhaps an exaggeration), and that in its earliest phase it was narrowly localized in southern Tunis. Yet it has obvious typological affinities with the Gravettian, especially in the late local developments of the latter; and Miss Caton Thompson has recently suggested that, as the Solutrean probably derives from Africa *via* Spain, so a swing of the pendulum in the opposite direction might have introduced the Gravettian tradition into North Africa from Spain, and so led to the evolution of the Capsian out of the Aterian.¹⁴ So again, there is a close resemblance between the late impoverished phase of the Grimaldian found in Sicily and the Oranian, though Vauflrey rejects the idea of their cultural connection. The rise of the mesolithic industries falls indeed outside the scope of this chapter; but we may observe in conclusion how the development of the new tradition seems to repeat in certain broad aspects that of the upper palaeolithic, in that it starts with a 'tendency' in widely separated areas with no obvious cultural connection with each other, and this preliminary phase is followed by a spread of certain characteristic industries over a wide area, and by a subsequent development of regional cultures.

So much for the probable course of industrial development during the last stages of the Glacial Age. But these industries were but one element of a culture, the other material remains of which call for some consideration. Doubtless, if our information were full enough, it would be true to say of the palaeolithic as of the neolithic that there is a 'palaeolithic culture',¹⁵ but a multitude of palaeolithic cultures; and it is a measure of the expansion of our knowledge in the upper palaeolithic that it is possible to distinguish within it a number of separate regional cultures, differing from one another perhaps no less widely than the later neolithic or historic cultures are known to do. The Magdalenian culture of France and northern Spain will be the subject of a later chapter: here I propose to consider more briefly the Aurignacian culture of France, and the Gravettian of South Russia and Moravia.

Mention has already made of the great variety of the gravers manufactured by the 'Aurignacians', and these specialized tools are proof of the number of specialized handicrafts they practised, and of the large number of implements and vessels in wood and hide and wicker they must have had, all trace of which has been obliterated. Their bone tools included the crude kind of bodkins

already mentioned, and spatulas for polishing. Indeed one can hardly doubt that they were as well provided, and as skilful craftsmen, as many modern savage peoples. Like the latter they adorned themselves with shells and teeth of animals, pierced and strung together for necklaces and amulets, and probably also with paint and feathers; and they buried their dead in a coating of red ochre, and with bracelets and coronals of shells. Among them we also find the earliest development of the arts of sculpture, graving and painting. This development will be discussed in a later chapter: here we may note merely that its earliest stage took the form of outline drawings of animals on the walls of caves, patterns of meandering parallel lines, and stencils of hands, made either by dipping the hand in paint and then pressing it against the wall, or by placing the hand against the wall and projecting colouring material, probably from the mouth, at and round it, so that when the hand was removed its shape was left outlined in colour. The hand thus stencilled is nearly always the left; and in the cave of Gargas in the Pyrenees many of them have fingers or finger-joints missing.

By such material relics as these the late palaeolithic hunters are revealed as the forerunners and authors of much in the later traditions of uncivilized and civilized humanity. Thus burial in red ochre was practised by the early Aryans of the South Russian steppe, while the same substance as a magical 'giver of life' is used in illness and at marriage and initiation ceremonies in modern India, and among the Australian aborigines. Again, both finger mutilation and making stencilled representations of the hand are customs widely distributed among modern uncivilized peoples, and we are justified in assuming that the same fundamental habit of mind, the religious or magical urge to sacrifice and self-mortification, underlay the practice then as later. In view of the position of the stencils and of the later evidence of the ritual use of caves, it is even possible that the mutilations were carried out as part of an initiation ceremony, as they are among the modern Australians. The cowrie shells which they used for amulets or ornaments connect even more significantly with later historical traditions and institutions. The magical value attaching to the cowrie, which is of almost world-wide occurrence, and which led to its adoption in many parts of the world as the earliest kind of currency, was originally due, it seems, to its resemblance to the female sexual orifice. Like the red ochre, which was the colour of blood and with which it is often found associated.

in graves, the cowrie, being shaped like the portal of birth, was a 'giver of life'. It has been argued that the cult of the cowrie originated on the shores of the Red Sea¹⁷; and in one of the Grimaldi caves fragments of a *cassis rufa*, a shell native to the Indian Ocean, were found associated with cowries. We may suppose that the cowrie cult and the Indian Ocean shell were both brought into Western Europe by early Aurignacian immigrants. But the presence of cowries in graves in the Dordogne is evidence also of a fairly extensive barter trade between the coast and the interior. In fine these 'Aurignacians' were already, within the limited environment to which they were adapted, masters of their fate, possessing a conscious heritage, with organized handicrafts and social life, capable of living and thinking beyond the moment, and employing some of their leisure from the mere struggle to survive in ritual and artistic forms of self-expression. They stand at the end, not only of a long line of biological evolution, but of a long cultural tradition, in the course of which a great deal of the groundwork of our humanity had been obscurely and fatally laid down and established. In relation to the huge earlier stretches of prehistoric time they seem almost our contemporaries.

This sense of modernity is still further increased when we turn to the life of the 'Gravettians' of South Russia, as revealed by the recent explorations of Efimenko and other Russian archaeologists. This region was a hunters' paradise. Every Spring, as the grass sprouted over the loess-covered plains huge herds of mammoth, reindeer, bison and wild horse moved northward from their winter grazing grounds in the Danube valley and shores of the Caspian and Black Seas, and every Autumn the grass withered under the increasing dominion of the ice, they moved back again to the South. At well-known defiles along the route the hunters pitched their camps and carried out an organized battue, which provided them, in season, with ample food supplies. At Pfyedmost the remains of over 1,000 mammoths have been counted. Probably, like modern hunting peoples of the northern tundra, they had regular seasonal movements, occupying temporary camps in the summer and more permanent quarters in the winter: in fact two types of station have been distinguished, one the open camp with a huge accumulation of animal bones and comparatively few tools, and the other consisting of permanent dwellings, with a large collection of tools and other signs of lengthy occupation. Thus at Gagarino was found an oval dwelling some five yards long and four yards wide and sunk two

feet below ground, lined with mammoth tusks and limestone, and roofed with logs overlaid with soil and kitchen refuse; at Kostenki a similar sort of house fifty feet long, with post holes for the roof supports and near-by storage pits; at Timonovka six half-subterranean dwellings, with floor sunk to a depth of two and a half to three yards and four associated store pits. In one of the latest of these dwellings were traces of a conical chimney, in others of hearths near the entrance. Mammoth bones were used for fuel, and in one place small lamps of soft stone were found. Besides a great number of stone tools they had awls, needles, dart-points, saws, polishers and shaft-straighteners of bone and ivory. A statuette from Mal'ta suggests that they wore trousered suits of fur like the modern Eskimocs. The semi-subterranean earth house was indeed a feature of the ancient Eskimo Thulé culture, which extended over the arctic zone of North America from the Bering Strait to Greenland; and it has also been found in mesolithic and neolithic stations or villages in Siberia,¹⁴ as well as among modern Palaeasiatic tribes of north-eastern Siberia. It seems likely, then, that the earth house, and other elements of the modern and historic arctic hunting cultures derive from this original Gravettian culture of South Russia. Common features are the riverside siting and the use of storage pits, which the modern hunters of the Siberian tundra use for storing salmon, which is eaten rotten in winter. There is no evidence of fishing by the 'Gravettians'. Bones of mammoth, arctic fox, woolly rhinoceros, wild ox, hare and marmot have been found in the dwellings; and the accumulations of bone, at some sites, as at Gonzi near Poltava on a tributary of the Dnieper, ranged into separate piles, suggest that after a successful battue the dead animals were collected and the meat then cut off the bones and transported to the storage pits for winter consumption. In any case the animals cannot all have been killed where the bones were piled, and it is possible that the hunters used some primitive kind of sledge for transporting the carcasses. The earliest known sledges were used by the mesolithic hunters of Finland, the runners of which have been found embedded in Finnish peat bogs; but a cruder type of hurdle sledge would have left no material trace of itself.

These hunting communities of the South Russian steppe seem, then, to have reached an even higher stage of material culture than their contemporaries in the West, particularly in respect of their construction of dwellings.¹⁵ Without them existence on the open

steppe in Winter would probably have been impossible. But the inventive ability and technical capacity of palaeolithic man in the face of such an impossible situation is not the less surprising; and it is somewhat puzzling too that wood should have been available in such a region of tundra or cold steppe. Or are we to suppose that it was transported from some more wooded region further south? Another puzzling fact about the reported excavations of these South Russian stations is the apparent absence of burials or human remains. In many of them quantities of red ochre have been found, which, as we have seen, was extensively used for burials in upper palaeolithic and later times; but the only human remains reported by Golomshtok in his survey are those from the Podkumok river in North Caucasus and the island of Undora in the river Volga, between Kazan and Simbirsk. Both these sets of fossils seem to conform to the Brno-Předmost type; but neither is associated with a Gravettian industry; and if the Podkumok skull may possibly be contemporary, the Undora skulls, on account of their more northerly position, must date from after the final Würm retreat.

But perhaps the greatest puzzle is provided by the female figurines which are the most characteristic feature of the Gravettian culture both in Russia and in central and western Europe, as well as forming part of the Siberian culture of Mal'ta. At Gagarino seven of them were found spaced round a wall, as though they had occupied specially made niches. The earliest are carved with notable skill and plastic feeling, though always with extreme exaggeration of the sexual features: they include the well-known 'Venus of Willendorf' and somewhat similar figures from Kostenki I and Gagarino. Later they become much cruder, and so conventionalized that they are hard to recognize as representing the human figure at all. Such are those from the Siberian station of Mal'ta, which have been taken to represent birds, but are almost certainly highly stylized versions of the female form. Notable also are those from Vestonice, modelled in ground and burnt bones mixed with mud and fat, a plastic composition unique of its kind.

These figurines present us with a twofold problem: first, that of the racial type they represent, and secondly, of the cultural purpose they were intended to serve. The Willendorf figure, besides its exaggerated fat, has its otherwise featureless head crowned with what might be taken to represent the tight, cork-screw curls of a negress. Many of the figures also seem to represent the condition of steatopygia, or accumulation of fatty

tissue on the buttocks, which is a characteristic of the modern Bushman and Hottentot races. Some authorities have therefore argued that they provide evidence of a negroid element in the upper palaeolithic population of Europe—as evidenced also by the supposed negroid character of the Grimaldi fossils—and of a racial and cultural connection between the 'Gravettians' or 'Aurignacians' and the modern Bushmen, whose ancestors have left monuments of their art in Africa hardly less remarkable than those left by the 'Magdalenians'. This thesis had more plausibility when it was assumed that the early upper palaeolithic industries were derived from Africa. The evidence to-day is all against an African 'invasion' of Europe at this time; and it is on the face of it unlikely that a people living under conditions of arctic cold should have had the physical characteristics which are naturally associated with a tropical habitat. Yet the evidence of physical type provided by the statuettes cannot be wholly neglected. Considered in relation to the marked sexual dimorphism of the early neanthropic peoples and to the cultivated obesity of the females in some modern East African tribes, to which reference has already been made, they suggest at least that a similar standard of female beauty must have prevailed among the palaeolithic 'Gravettians'.

Then there is the question of their cultural significance. Certainly they were fertility charms of some sort, like the cowrie shells of the 'Aurignacians': many of them seem intended to represent a woman in an advanced stage of pregnancy. Are we to suppose that they were merely charms to cure barrenness or aid accouchement, ■ the figurines found at Tall Arpachiyah in Assyria, Tell Beit-Mersin in Palestine and other Near East proto-historic sites, and which have been taken to represent the actual process of child-birth, are supposed to be by some authorities?⁹⁰ But these latter belong to a much more advanced stage of society, with ■ organized religious cult and specialist occupations, and some degree of manufacture for the market; and we have to ask ourselves whether it is likely that the palaeolithic figurines, some of which display a high degree of technical skill and careful workmanship, could have been made by the women themselves, or by the men to serve a purely female purpose, or for such a comparatively remote and ideal end as an increase in the population. All the evidence is that both primitive religion and primitive art were a male creation and prerogative. Were they not rather 'charms of increase', intended to serve a more immediate

economic purpose by guaranteeing an essential part of the food supply? In that case they stand at the head of a long tradition, and have for descendants the great figures of Cybele and Isis and Demeter, Diana of the Ephesians and Aphrodite of the Hellenes. All these mother goddesses of late times, the historic centre of whose cult was in Syria, were associated with the yearly cycle of agriculture. It is hardly conceivable indeed that even the most primitive kind of agriculture was practised by palaeolithic females right up under the edge of the ice-sheet; but it is possible, though the weight of archaeological opinion is on the other side, that it was practised in the more southerly Asiatic region from which the Gravettian culture is believed to have originated, and that the magic association persisted after the agricultural efforts of the females had been perforce abandoned. Alternatively we might suppose that, like the Yukaghir and other modern hunting peoples of the Siberian tundra, the 'Gravettians' depended for an essential part of their food supply on roots, berries and other vegetable foods, which it was the task of the females to gather in season: perhaps it was their vitally important task to fill the store pits with winter provisions. In any case we have to recognize that this art-cult was specifically Gravettian, in contrast with the entirely different animal art-cult of the 'Magdalenians'; and in view of the likely derivation of the Gravettian culture from Hither Asia the possibility of a connection between it and the later Mother Goddess cults of the ■■■■ region can hardly be overlooked, though the nature of it remains uncertain, and the fact of it still to be established.

A few final points. Firstly, that one of the figurines from Kostenki I, with protruding abdomen and well-pronounced pubic triangle but no scatopygy, has ■■ engraved triple line above the pendant breasts, which may represent either some kind of ribbon or necklace, or tattooing. Secondly, that besides the typical figures with enormously exaggerated breasts and buttocks, others have been found of normal proportions; and one slim figurine has the indications of a girdle worn under the breasts in the classical Hellenic style. All these, it is to be noted, come from the West. Of particular interest is the head of ■ woman or girl with the nose and facial contours briefly indicated, and the hair shown as hanging down in curls. This at least can hardly be regarded ■ a fertility charm. Thirdly, that besides the female figurines the art of the 'Gravettians' consisted mainly in engraving intricate geometrical designs on bone and ivory in the manner of the

modern Maoris and South Sea Islanders. At Mezine many such engraved round or square plaques have been found, most with traces of perforations at one end, as though intended to be worn as pendants on necklaces: some of them have schematic representations of animals on them. At Mezine also was found a bracelet of mammoth tusk in the form of a wide curved plaque with perforations at each end for fastening it, and very finely engraved with a design that extraordinarily anticipates the well-known Greek key pattern; while on some tusks and bones a series of small parallel cuts suggests some kind of tally, or memory aid.

NOTES

¹ See *l'Anthropologie*, Vol. 51, p. 373, and Georges Goury, *Origins et Évolution de l'Homme*, Tome I, (2e edn., 1948), p. 137.

² Whether — regard these different types as separate races, or merely as varieties of a single race, is a matter of individual preference. The ambiguities attending the word 'race' are discussed in the next chapter.

³ 'Seems', because the nose bone was broken off and lost. But a photograph of the skull in its original condition has been preserved. See Sir Arthur Keith, *New Discoveries relating to the Antiquity of Man* (1931), p. 395.

⁴ Boule, *op. cit.*, pp. 481 *et seq.* Keith, *op. cit.*, p. 23 and Chapters VII and VIII.

⁵ *The Northern Bantu* (1915), pp. 4-5 and 103.

⁶ But, according to G. S. Coon, *The Races of Europe* (1939), p. 30, the resemblance is rather to the male Obercassel type.

⁷ *Annals of Eugenics*, Vol. IV (1930-31), pp. 109-214.

⁸ Cf. D. A. E. Garrod, *The Upper Palaeolithic in the Light of Recent Discovery in P.P.S.*, Vol. IV (1938), p. 20. On this article of Professor Garrod the account of the upper palaeolithic in this chapter is principally based. It should perhaps be noticed that Professor Vausfrey and other French authorities do not accept the priority in time of the Palestinian upper palaeolithic series over the French, which this account presumes. But though the origin of the blade-and-graver tradition remains uncertain, it is at least reasonably certain that the Crê-Magnon people were immigrants from Hither Asia, and brought with them their characteristic Aurignacian industry.

⁹ Cf. Marc R. Sauter, *Préhistoire de la Méditerranée*, pp. 164-165.

¹⁰ On foehn winds see W. B. Wright, *The Quaternary Ice Age* (2nd edn., 1937), pp. 18-19.

¹¹ See V. Gordon Childe, *The Cave of Parballó and the Upper Palaeolithic Age in south-east Spain in Antiquity*, Vol. XVIII (1944), pp. 29-35.

G. Caton Thompson, *Huxley Memorial Lecture for 1941*, pp. 29-34, and M. R. Sauter, *op. cit.*, pp. 81-99.

¹² Cf. M. R. Sauter, *op. cit.*, pp. 62-64, 72 and 98.

■ See *l'Anthropologie*, Vol. 49, pp. 126-129.

¹⁴ At the First Pan-African Prehistoric Congress, held at Nairobi in 1947, it was decided to change the term 'Kenya Aurignacian' to 'Kenya Capsian'. See the account by Dr. Oakley in *l'Anthropologie*, Vol. 51, pp. 251-262.

¹⁵ G. Caton Thompson, *loc. cit.*, pp. 32-34.

¹⁶ Cf. V. Gordon Childe, *What Happened in History* (1942), p. 56: "There is no 'neolithic culture', but ■ limitless multitude of neolithic cultures."

¹⁷ See J. Wilfrid Jackson, *Shells as Evidence of the Migrations of Early Culture* (1917).

¹⁸ See J. G. D. Clark, *The Question of Mesolithic Houses in P.P.S.*, Vol. V (1939), pp. 98 *et seq.* Also Henry Field and Eugene Prostov, *Archaeology in the Soviet Union in The American Anthropologist*, N.S., Vol. 39, No. 3 (1937), pp. 479-481.

¹⁹ It is claimed that similar permanent huts also existed at P'edmost, Lang-Mannersdorf (Lower Austria), Solutr  and other places in the West, which were mistaken by the excavators for simple hearths. See E. A. Golomshtok, *The Old Stone Age in European Russia in Transactions of the American Philosophical Society*, Vol. XXIX, Part II (1938), p. 425.

²⁰ See M. E. L. Mallowan and J. Cruickshank Rose, *Excavations at Tall Arpachiyah 1933 in Iraq*, Vol. II (1934).

CHAPTER VI

CLASSIFICATION OF RACIAL GROUPS

IN THE PREVIOUS chapter some early neanthropic types were put forward as possible ancestors of certain existing races. But the fossil evidence so far considered accounts for only a fraction of the existing population of the world, and in the present chapter it is proposed to look backwards from the present to the past, and broaden our view of the original peopling of the world by a brief ethnological survey of existing races and peoples. Such a view will serve to supplement and correct conclusions drawn from the necessarily narrow archaeological and palaeontological context.

All biological classifications are to some extent conventional, since they attempt to impose a logical system on the limitless and intractable surge and complexity of living forms. But there is at any rate general agreement among biologists on the meaning to be attached to terms like 'species' and 'genus', whereas there is no such agreement among ethnologists about the term 'race'. Ideally the population of the world should be divisible into a number of races, each with a distinct physical constitution which marks it off from all others; and there are a few peoples, such as the Ainu, and the Bushmen of South Africa, which fulfil these conditions. But such a pure or ideal race with a unique, clearly definable constitution, is only found in a remote region where it lives isolated under uniform physical conditions. All over the central area of the Old World frequent migration, intermarriage between different groups, and other processes of evolutionary change, have produced an inextricable medley and mosaic of types. Some ethnologists have imposed order on this confusion by selecting some particular characteristic, such as skin-colour, or pilous system, or head-form, and have so divided the population of the world into a few main races or racial groups. Such a classification may be useful for some purposes; but the boundaries thus established can carry no genetic signification. Moreover, they fall quite differently according to the particular criterion

chosen, the Australian aborigines, for instance, being grouped with the Nordic Europeans in respect of their pilous system and head-form, but in respect of their skin-colour with the negro races.

On the other hand if the word 'race' is used in a more restricted sense, and a more detailed discrimination of types is attempted, the complexities of the task become overwhelming, and the artificialities of the ethnological map still remain, the population of a comparatively small region being distinguished into a number of hypothetical 'races' which may nowhere exist, or ever have existed, as a unitary geographical group. Again, whereas living people differ from each other physically in a number of ways which may be brought under the three main heads of colouring or complexion, pilous system and skeletal constitution, our knowledge of the physical type of prehistoric peoples is limited to their skeletal remains, and in many cases to the skull alone; and we are compelled therefore, in tracing back existing types and stocks to their prehistoric origin, to rely on the skeleton, or the skull alone, as the criterion of genetic connection. Yet we find that peoples or individuals of similar skeletal dimensions may differ extremely in skin-colour or hair-form. Nor are there any grounds for assuming that the former are genetically more stable than the latter. Nor, finally, can we legitimately assume that the physical type of any particular human stock has remained unaltered from prehistoric times, or that the physical resemblances between the inhabitants of different areas, or of the same area at different times, is proof of genetic connection. If, for instance, the present inhabitants of the Dordogne region of France reproduce to some extent the physical characteristics of the prehistoric Crô-Magnon race in the same region, we cannot be sure whether this is due to the descent of the one from the other, or to a similar biological adaptation of two distinct human stocks to the same local conditions.

Race, that is, the hereditary physical constitution of a human group, expresses the balance of genetic and environmental factors. In the short run, and under stable conditions, the hereditary genetic pattern tends to be handed down unaltered; but in the long run, through biological processes of which we have very little understanding, it is liable to change in one or more directions. Race, then, is to be thought of, not as something fixed and unalterable, but as having natural limits in time and space. As Professor Fleure puts it: "Race characters should not be thought of as present in unchanging fashion from the earliest times till now, but as features developing with the lapse of time."¹ Similarly

C. S. Coon, in the introductory chapter of his *Races of Europe*, lays it down that "the most important thing about a race is that it is an entity, however ill defined, which is never static, but always in process of change"; and he recognizes three factors in this process, *amalgamation* or race mixture, *selection* through such socio-biological events and processes as selective mating, war, migration and relative fecundity, and *environmental response*.³ These factors are, however, so closely linked together that it is impossible in most cases to distinguish their separate operation and effects. We are still largely ignorant of the application of Mendelian rules to human breeding, and so unable to interpret particular sets of fact in Mendelian terms. For instance, the tendency to brachycephalization (i.e., to head-shape diminishing in length and increasing in breadth) in several parts of Europe since the Dark Ages, which has been established as a fact by various regional surveys,³ may be due, as Coon supposes, to the 're-emergence' of an older palaeolithic strain in the population; but it may equally well have been due to the ■■■■ kind of evolutionary trend that was responsible for the original trend to brachycephaly in the palaeanthropic stock. On the other hand it is clear that habitat alone (using the word in its broadest sense to include the whole complex of social and geological conditions) does effect the physical constitution. It is clear, for instance, that there is a direct relation between the poverty of certain villages and cantons in France and the stunted stature of the inhabitants, and that increases in the average height of some European populations during the last century is a result of improved living conditions.⁴

We may conclude, then, (without thereby becoming disciples of Mr. Lysenko) that race is a shifting and irresolvable compound of heredity and habitat. And from this conclusion it would seem to follow that we must give up the idea of a 'family tree' of mankind, with several distinct 'lines of descent' and with 'mixed' and 'pure' stocks, and attempt a classification rather in geographical-evolutionary terms: that is to say, we must start from what appears to be the most primitive form of *Homo Sapiens*, morphologically and in time, and consider how far and in what directions existing geographical groups have diverged from this primitive prototype, relating the evolutionary changes and specializations that have occurred to the past and present climatic and other conditions of life in different regions, so far as they are known or surmised. As we have seen in the last chapter, the earliest neanthropic fossils

form a distinct group with certain features which approximate towards the palaeanthropic, and which may therefore be regarded as primitive. These features are typically represented by the fossil remains from Brno-Předmost, Afalou bou Rummel and from Wadjak, Talgai and other Australian sites; and the nearest living approximation to this primitive type is undoubtedly the Australian aborigine. If, then, we take the Australians to be the nearest surviving representatives of the biologically most primitive type of neanthropic mankind, and further suppose, what seems probable on other grounds, that they have preserved more nearly than any other race the primitive and unspecialized forms of skin-colour and pilous system, we may classify other racial types and groups in terms of their more highly evolved or specialized divergencies from this primitive norm, in respect of (a) hair-form and pilous system, (b) skin-colour, (c) bodily framework and (d) head-form.

(a) The relative straightness or curliness of the hair depends on its microscopic shape in transverse section, woolly hair being a flattened ellipse, and straight hair round. As there is every degree of variation in the relation of length to breadth in the transverse section, there is every degree of variation from the 'peppercorn' tufts of the Bushmen through woolly to frizzy, curly, wavy and lightly waved to straight. We may, however, conveniently distinguish the three main types of hair as straight, wavy and frizzy; and of these wavy, which is found among the Australians, is the primitive and unspecialized form, from which the other two have diverged in opposite directions. But the difference is not merely in the form of the hair but in its amount and distribution. General hairiness, especially of the males, is a primitive characteristic, which has been lost by more evolved races. On this basis, then, we may make the following evolutionary classification:

1. The wavy-haired Australians, Ainu and fair-skinned Europeans, among whom the males generally have full beards and a considerable growth of body hair, form the most primitive and unspecialized group.

2. The brunet races of the central zone generally retain the unspecialized form of wavy hair, but show a more advanced evolutionary trend in the diminished hairiness of the males.

3. The negroid races of Africa and south-east Asia and Oceania are specialized in varying degree towards a frizzy or woolly type of hair. In the extent of male hairiness they vary greatly, the

Aeta or Negritos of the Philippines being as hairy as the Australians; but the majority of the woolly-haired peoples tend to be less hairy than the wavy-haired.

4. The straight-haired, yellow-skinned peoples of Asia and America are the most evolved and specialized, the men often being almost as glabrous as the women.

(b) The skin-colour of the Australians is chocolate brown; and brown or dark brown may be taken as the typical colour of the human body at all stages of its evolution, from which there has been evolutionary divergence and specialization to black or near black in the case of many negroid peoples, yellowish-bronze in the case of many Oriental peoples, the Amerinds, and the Bushmen of South Africa, and reddish-white in the case of most Europeans. No doubt skin-colour is to some extent dependent on individual experience, those who live exposed to the sun acquiring a much darker shade of colour than those of the same race who live protected from it. The Australian baby is several shades lighter than the adult; and people of yellow-skinned race may in tropical countries become indistinguishable in adult life from the brown-skinned. Probably, while black and yellow as well as white skin-colour are evolved and specialized forms, the yellow is less irreversible than the other two; and the brown, being primitive and unspecialized, may have a greater tendency to vary towards either a lighter or darker form. The extreme fairness of the European Nordic is an unexplained form of response to a sub-arctic environment, and may well have been acquired before the close of the Glacial Age. That the present dwellers within the Arctic Circle are not white but yellow-skinned suggests that the conditions in which the blondism of the white races developed were different from those now prevailing in the Arctic, or else that the yellow-skinned peoples embody a later and in some way more effective response to such conditions.

(c) The skeletal variations of the human frame are extremely complex; and I must confine myself to the simple case of over-all size. If we take as primitive the early neanthropic type, heavily built and broad-shouldered with an average male height of between 5 and 5½ feet, the Bushmen and Hottentots, the Veddah and Toala and other jungle tribes of India, the Indonesians and other of the shorter southern brunet peoples, the Ainu, Lapps, Eskimoes and other dwellers in the Arctic, and many southern Chinese, must all embody in different ways an evolutionary trend towards a smaller frame; and the extreme specialization in this

direction is found among the pygmy Negrilloes of Africa and Negritoës of south-east Asia. Extreme dwarfism is clearly a response to an unfavourable environment, but it does not follow that all cases and degrees of it are attributable to the same cause. Another evolutionary modification is towards increased height with skeletal lightness and delicacy, and fineness of the extremities. This characteristic is found among the Somalis, Masai and other peoples of East Africa, as well as among the Nilotic Negroes, and it is already present in some of the fossil material from East Africa, of disputed, but most probably early post-glacial date, such as the Oldoway skeleton, and some of those from Gamble's Cave. This tall, slender type is also found in India among the Rajputs and in northern Europe; and according to Coon it is a noticeable trait of the English settlers in Queensland, Australia.*

(d) Among the various evolutionary changes in head-form we may distinguish the following: (i) disappearance of the brow-ridges and heightening and doming of the vault; (ii) brachycephalization; (iii) disappearance of prognathism and reduction of the jaw and lower part of the face in relation to the head; (iv) heightening and narrowing of the nose; (v) reduction of skull capacity both in relation to the body and absolutely. The first of these changes has occurred almost universally to a greater or less extent, the Australians alone preserving the heavy pent-house ridges of palaeolithic man; but it has proceeded further among the southern brunet dolichocephals and the yellow-skinned Orientals than it has among the central and northern Europeans, and reaches its maximum among the African Negroes and Negrilloes, who tend to preserve the bulging forehead of infancy. On the other hand the Negritoës and Oceanic Negroes generally have a considerable development of the frontal torus; and of the Amerinds some approximate to the Oriental type, while others seem to have 'regressed' towards a European type of face with aquiline nose and prominent brows. Some degree of brachycephalization is found among the Negritoës and Negrilloes and among some Bantu-speaking Africans; but the main area of brachycephalization is among the Alpines of central Europe, the Balkans, Asia Minor, the Caucasus and the whole of northern and central Asia; and it is also general among the Amerinds, though with some exceptions, especially in South America. The reduction of the jaw in relation to the face is another almost universal evolutionary change from the primitive neanthropic form. The change is

least among the dark-skinned peoples of Africa and Asia, among whom some degree of prognathism is general; but it has probably gone further among the southern brunet dolichocephals than among the peoples of northern and central Europe, and the extreme case of reduction is found among the Bushmen. Heightening and narrowing of the nose is a typically European specialization, found also among the lighter-skinned peoples of Asia and among some Amerinds. Finally, absolute smallness of skull, which may be regarded as a modification of the generally large or very large skull of the early neanthropes, is found in an extreme form among the Veddah of Ceylon and the extinct Tasmanians.

From this very brief summary of evolutionary changes and specializations we may draw some important conclusions. The first is that what are considered the most advanced races are not biologically the most fully evolved: ■ the contrary the northern, long-headed, big-boned, fully-bearded European is in many ways more 'primitive' than the smaller, broad-headed, straight-haired, glabrous Burman or southern Chinese; and generally, the straight-haired and the woolly and frizzy-haired peoples show as biologically more advanced ■ specialized than the wavy-haired peoples. A corollary of this conclusion is that the degree of biological evolution has nothing whatever to do with intellectual capacity or cultural maturity. It is indeed highly doubtful whether we can associate race, i.e. the physical characteristics of a human group, with any kind of mental quality whatever, since the innate or hereditary disposition of the individual is indistinguishable as an entity from his character as a member of a particular society. It is no less doubtful whether we can properly distinguish evolutionary advance from evolutionary specialization and degeneration in the human sphere. We may say that as mankind achieved his dominant position in the animal world by remaining relatively unspecialized to ■ particular milieu and way of life, so the dominant ■ are those which have remained unspecialized, either to a tropical climate like the Negroes, or to a climate with extremes of cold like the Eskimoes, and perhaps the smooth-haired peoples generally. But we have to admit that the Australians as well as the 'Caucasians' have remained thus unspecialized; and if we claim that the latter are further evolved from the primitive form of mankind, we also have to admit that the southern brunet dolichocephals and the Alpines are, each in their different way, further evolved than the Nordics.

Another point is that, except in the case of brachycephalization, all these evolutionary changes are in the direction of infantilism: that is, the male fails to develop some of his special adult male characteristics, such as hairiness, height, heaviness of build, large extremities, and so remains nearer his infantile form. And since women retain more infantile characters in adult life than men, this means that the males tend to draw closer to the females in their bodily proportions and appearance. As far as I am aware, no systematic investigation has yet been made of the degree of sexual dimorphism in different races; but we know at least that it was much greater among the earliest neanthropes than it is among existing races, and among the latter it is probably least among some of the straight-haired Oriental peoples, who on those grounds also may be regarded as biologically the most advanced. There are three further points. Firstly, that while some changes, such as increase or decrease of stature, may in their origin be directly dependent on habitat, as they become incorporated in the genetic constitution they tend to become irreversible. It is unlikely, for instance, that the pygmy stature of the Negrilloes or Negritos could now be overcome by any change of habitat or diet. The pilous system in its evolved and specialized forms is probably one of the most stable and irreversible of physical characteristics, and for that reason provides one of the most reliable criteria of racial classification and genetic affinity. Secondly, we have to remember that these specializations may have arisen at all stages of the evolution of mankind; and there is reason to believe that the specialization of some existing races did in fact arise before the full attainment of neanthropic status. Finally, with regard to that awkward but indispensable word 'race', it seems to me that it is most appropriately applied to such isolated and particulate groups as the Bushmen, Negrilloes, Eskimoes or Ainu, and that where we find populations of mixed physical type it is preferable to speak of 'peoples', when the reference is geographical, and of 'racial types' or 'strains', when the reference is to physical characteristics; while the larger geographical and somatological divisions may be called 'racial groups' or 'families' or 'classes'. Precision in all cases is hardly possible; but we should, I conceive, avoid as far as possible a terminology which implies that mankind is divisible into a number of clearly defined and unalterable hereditary types or varieties, or which confuses physical characteristics with national or cultural boundaries or affiliations.

On the basis of these principles I propose now to consider briefly the physical character and possible origins of the existing populations of the world, divided (for convenience) into the following physio-geographical groups:

- I. AUSTRALOIDS ■ south-eastern wavy-haired Group.
 - II. OCEANIC NEGROIDS ■ south-eastern frizzy-haired Group.
 - III. NORDICS ■ northern long-headed wavy-haired Group.
 - IV. LEIOTRICHI or straight-haired Group.
 - V. MEDITERRANEANS ■ southern long-headed wavy-haired Group.
 - VI. AFRICAN NEGROIDS or southern frizzy-haired Group.
 - VII. ALPINES or central broad-headed wavy-haired Group.
- I. AUSTRALOIDS or south-eastern wavy-haired Group.

The principal member of this Group ■ the race of aboriginal *Australians*, who have wavy or curly hair, with well developed beards and body-hair like that of an average north-European, to whom they approximate also in height. The colour of the skin is dark brown, the skull long and flat with prominent brow-ridges, the nose flat and wide and the jaws prognathous. As we have seen already, they are probably descended from ■ Far Eastern stock, whose separate evolution can be traced back to the beginning of the Pleistocene. Perhaps the absence in this south-eastern quarter of the Old World of the climatic changes which elsewhere stimulated the process of evolutionary change, favoured the survival of this primitive (or should we say perhaps 'biologically retarded') stock, as the geographical separation of Australia also allowed the survival of other primitive types of flora and fauna. Even when during the glacial maxima the ■ levels were lowest, and south-eastern Asia was enlarged to include the Philippines, Borneo, Celebes, Java and Sumatra, and an enlarged Australia included New Guinea and other islands to the North, a fifteen mile stretch of open sea still remained between the islands of Bali and Lombok; and it is a striking tribute to the daring and resources of primeval man that this lowly folk with their crude palaeolithic implements should have been able to cross it.

To this same Australoid Group belong the various jungle tribes of the Deccan (*Kadir*, *Paniyan*, *Irula*, *Kurumba*), the *Veddah* of Ceylon, *Sakai* of the Malay Peninsula and Sumatra, and

Toala of Celebes. These tribes differ in several respects from the *Australians*, as well as among themselves, probably as a result both of local differentiation and of inter-marriage with later comers; but they all have wavy or curly hair, dark brown skins, and platyrrhine noses, and, except the *Toala*, are dolichocephalic. Their ancestors at one time were spread over India and all south-eastern Asia, and according to Coon there is trace also of a 'Veddoid' strain in the inhabitants of the coast of Arabia and in East Africa, though whether it is aboriginal or due to migration he is not prepared to say¹: their early evolution may be associated with the development of the chopper-tool industries of the Far East. The later expansion of more highly equipped peoples drove them into the jungles and outlying nooks and corners of their originally wide domain; and their low stature, as compared to the *Australians*, and perhaps also the abnormally small heads of the *Veddah*, are most probably the result of their unfavourable habitat.

II. OCEANIC NEGROIDS or south-eastern frizzy-haired Group.

This Group of peoples, while they resemble the African Negroids to some extent in their pilous system and skin-colour, differ from them markedly in other respects, and the evidence is all against their having a common origin with them. They may be divided into three main branches, the *Negrïtoes*, comprising the *Andamanese*, the *Semang* of Malaya and Sumatra, the *Aeta* of the Philippines, and *Tapiro* of New Guinea; secondly, the now extinct *Tasmanians*; and thirdly, the *Papuasians*, comprising the *Papuans* proper and the *Melanesians* of the range of islands stretching from the Bismarck Archipelago to New Caledonia and Fiji.

The *Tasmanians* are described as of medium height, with almost black skins, small eyes set under overhanging brow-ridges, long or medium-long skulls of minimum capacity, broad, short noses with widely distended nostrils and a deep notch at the root, prognathous jaws, and extremely large teeth. Culturally they stood at an even lower level than the *Australians*, with whom they have some physical resemblances; and it is generally agreed that the frizzy hair found among some *Australians* is evidence of an admixture of *Tasmanian* blood. We may note also that a coarse stone industry found at a site south of the McDonnell Range in Central Australia resembles that of the recent *Tasmanians*, and is probably of great antiquity.² The *Tasmanians* then were

at some distant date in the past inhabitants of Australia, and must have either crossed into Australia from the Asiatic mainland before the arrival of the proto-Australians, or else have acquired their specialized negroid characteristics in Australia itself; and of these alternative hypotheses the latter seems to me the more reasonable. It has to be remembered that the proto-Australian crossing took place probably as early as the first extreme of the Würm glaciation, and that the migrants, as represented by the fossil skulls of Keilor, Talgai and Coghna, were not yet fully evolved from the palaeo-anthropoid stage; and the depression at the root of the nasal bones and enormous canine teeth are characteristics of the Talgai skull which might well be described as 'proto-Tasmanian'. The subsequent differentiation of the two races would be explained by supposing that, while the main body of immigrants lived by hunting in the open plains and grasslands, some became acclimatized in the tropical forests which must have covered some areas of the enlarged glacial continent, and developed the specialized traits appropriate to such a habitat, and that the post-glacial desiccation of the forests gradually drove them south, until a remnant took refuge in the Bass Strait in Tasmania.

The *Negritos* are dwarfs, with an average stature of under five feet, medium or broad heads, deep-set eyes, short, flattened nose, sunken at the root, and moderately full lips. The Swedish savant Kaudern has shown that the Andaman Islands, which are nearly 100 miles distant from the coast of Burma, are linked to it by a submarine plateau 308 yards deep (whereas the nearby Nicobars, which contain no *Negritos*, are separated by a much deeper channel), while the Philippines are linked to Indochina by a plateau along the north coast of Borneo only 219 yards deep; and on the basis of these facts he has argued that the *Negritos* must have reached the Philippines during the last glaciation, but could only have crossed to the Andamans during the earlier Riss glaciation, during which the maximum marine regression occurred.⁸ In view of the fossil evidence such a very early date for a 'proto-Negrito' race is hard to accept; and though the submarine plateau linking the Andamans to Burma may not have been fully uncovered during the Würm glaciation, it may have been uncovered sufficiently to allow these primitive humans to cross the narrow intervening channels, as the proto-Australians were able to cross to Australia. But Kaudern's argument does convincingly explain the present distribution of the *Negritos*, and

so leads to the conclusion that they must have moved out from the mainland during the Würm glaciation, if not before; and presumably they had already then acquired their racial differentiae. We may note also that the *Semang* of Malaya resemble the *Sakai* of the same area both in their pygmy stature and in a special thickening of the integumental part of the upper lip, so that the latter have sometimes been classed among the *Negritos*. This suggests that the *Negritos* may be related to the primitive wavy-haired people of the Asiatic mainland in much the same way as the *Tasmanians* to the *Australians*, their frizzy hair and other negroid traits being acquired by an early specialization.

The *Papuans* and *Melanesians* are characterized by their frizzy, mop-like hair, generally high and very long heads, large, straight and often aquiline noses, and height generally above the average. Both in skin-colour and in other characteristics there is a wide range of variation, the result of inter-mixture with other racial strains, both the Earlier Australian and later Indonesian and Mongolian. We may suppose that they became differentiated from the original proto-Australoid stock during the last glaciation while inhabiting the then eastward extension of Asia to the Philippines and Borneo, and that they moved out subsequently to New Guinea and Melanesia, occupying the more distant islands only after acquiring the art of navigation from the much later coming Indonesians and Polynesians.

The general conclusions about this south-eastern Group of OCEANIC NEGROIDS are: first, that their original distribution and differentiation must have taken place as early as the last stages of the Pleistocene and during the evolution of mankind to its final neanthropic form; second, that their negroid characteristics are due to a tropical forest habitat, and not to any common ancestry with the African Negroes; and third, that they are a specialized branch, or rather, three branches all specialized in a similar direction, of the primitive south-eastern stock represented by the pleistocene fossils of Java and Australia, and of which the *Australians* and other wavy-haired peoples of south-east Asia are the more typical modern representatives, because they have remained unspecialized. This conclusion receives some support from the fossil remains recently found at Tongking and Annam in association with a mesolithic industry, and which indicates that before the arrival of the Indonesians and Orientals in this region, it was inhabited by a mixed population which included Australoid, Negrito and Papuanian elements.*

III. NORDICS ■ northern long-headed wavy-haired Group.

The probable derivation of the Nordic element in the population of Europe from its palaeolithic inhabitants has already been noticed. The Brno-Předmost type might indeed be called proto-Nordic in the same way that the Talgai-Cobuna-Keilor skulls are called proto-Australian. Different types and stages in the development of this big, long-headed type are represented by skeletal remains from the Murzak Koba cave in the Crimea, Stängenäs in south-west Sweden, Pritzerber See in Brandenburg, Deventer in Holland, and by the long-headed skulls from Ofnet in Bavaria, all of mesolithic age, and in neolithic and later times by a number of kurgan and other burials all over Russia and Scandinavia, and in central Europe, north Germany and Denmark and the British Isles. I use the term 'Nordic', however, without implying that all branches of this long-headed northern stock were necessarily blond in the full sense of having fair hair and light-coloured eyes, though it may be assumed that the European branches at least were all fair-complexioned. Probably at all stages there has been considerable variation of colouring; and the blue-eyed, yellow-haired type of northern Europe may represent a later stage and degree of blondism than the ash-blond, dark-eyed (and now brachycephalic) type of southern Russia. Also the distinction between the northern (Nordic) and southern (Mediterranean) long-headed, wavy-haired Group is not to be thought of as absolute and original, but as arising later through the brachycephalization of the central area. Thus the tall or moderately tall, long-headed type with dark or medium hair (the Atlanto-Mediterranean race of Deniker), found in Spain and Italy as well as in the British Isles, and which also, according to Coon, forms ■ part of the population of North Africa, Iraq, Palestine, parts of Arabia and the eastern Balkans, may be regarded ■ an intermediate type, probably of Mediterranean origin; while the big-boned, dark-haired dolichocephals, with prominent brows and cheek-bones, found in the Dordogne and parts of Wales, as well as in North Africa and the Canaries, are another distinct intermediate type, being perhaps isolated local survivors of the late palaeolithic population of the North West. Such intermediate types may be classed as Nordic or Mediterranean according as they live in the northern or southern area; and there is likely to be a corresponding regional difference of complexion. On the other hand many modern descendants of the early

NORDICS of eastern and central Europe no longer belong to a dolichocephalic Group.

In northern Asia there remain traces among the existing predominantly broad-headed population of an earlier long-headed race. Thus among the *Gilyaks* of the Amur basin and island of Sakhalin a 'Caucasic' type with full beard is reported, and a similar type, tall, bearded, with fair skin and brown hair has been distinguished among the southern *Koreans*, and represents apparently the ancient *Hans*, who occupied the country before the arrival of the Mongoloid *Sien-pi*. Deniker speaks also of a non-Mongoloid type among the *Tibetans*, with prominent and often aquiline nose, straight eyes, and long and sometimes wavy hair.¹⁰ This accords with the archaeological evidence of the spread of upper palaeolithic culture traditions eastward through Siberia and central Asia, and with the presence of long-headed skulls from prehistoric stations in Tranbaikalia, and in the Bronze Age kurgans of the Minussinsk district of southern Siberia which resemble those of Russia, and in which long-headed Nordic skulls and others of broad-headed Mongoloid type are found in almost equal proportions. We may conclude that the earliest neanthropic inhabitants of a large part of central and northern Asia were physically akin to the early NORDICS of Europe, though we cannot be sure whether they were of 'European' descent or had separately evolved from some local palaeanthropic stock.

This uncertainty recurs in the case of the *Ainu*, the only existing long-headed, wavy-haired race of northern Asia, who have also been regarded as a primitive branch of the early neanthropic or proto-Nordic stock of Europe. They are a very distinct type, short, thick-set, with brunet complexion and abundant black, wavy hair; and the men are extremely hairy all over the body. The skull is large and generally rather flat, with full occiput and well-developed brow-ridges, the face broad, with short, moderately wide nose, and the whole head is extremely massive. If they resemble in some respects the long-headed European type, they also to an equal extent resemble the *Australians*, and differ in many ways equally from both; and in view of their short stature, black hair and rather swarthy skin they are hardly to be associated with the tall, fair strain among the *Koreans* and other Mongoloid peoples. They are in fine a highly specialized race, occupying as it were morphologically as well as geographically the third, north-eastern point of the triangle, whose western angle is occupied by the Nordic Europeans, and south-eastern by the *Australians*.

With the existing evidence it is hardly possible to pronounce upon their origin; and the skeletons from the upper Choukoutien cave, referred to in the last chapter, have thrown very little light upon the problem.

IV. LEIOTRICHI or straight-haired Group.

This is by far the largest of all human Groups, including the vast bulk of the population of northern, central and eastern Asia, and all the original population of the Americas. But all these peoples fall into a single Group in so far as they all seem to derive from a single geographical area, from which they have spread out in comparatively recent times; and because, in spite of great divergencies of physical type, they share certain marked characteristics, especially of the pilous system, which distinguish them from all other Groups. Their original home and area of evolutionary differentiation has been placed in the central Asiatic tableland, perhaps the Tarim basin, ■ the lacustrine plateau of Tibet, then standing at a lower level than it does to-day, and enjoying in ■ phases a warmer climate and more abundant flora and fauna. Somewhere in these secluded grasslands, it has been suggested, leiotrichous man may have developed his special characteristics in intimate, parasitic connection with the horse. Instead of hunting it and living ■ the flesh of his dead prey, like savages elsewhere, he moved with the wild herd from pasturage to pasturage, sharing with the foals their mothers' milk and finding there his sole supply of food. This peculiar mode of existence is held to account for his flat face, the special architecture of the jaw, and character in some respects of retarded infancy, as well as for some traits of Oriental character and culture, the absence of any palaeolithic industry in central Asia, and the combination among many leiotrichous peoples of a normal emotional apathy with a capacity in certain circumstances for uncontrolled and 'almost equine' excitement and savagery.¹¹

This is ■ beguiling hypothesis; but the Mongoloid traits of the Chancelade skull, of ■ of those from the upper Choukoutien cave, and even, according to Keith, of the primeval Peking Man, provide evidence that some at least of the traits of the existing leiotrichous peoples may arise as ■ recurrent evolutionary trend in widely separated geographical areas, probably in response to a climate with severe extremes of cold; and it is probable that the Mongoloid traits of the modern Lapps are to be accounted for in a similar way, rather than by descent from, or inter-mixture with,

the main stock of Asiatic LEIOTRICHII. In the numerous Hunnish and Avar cemeteries of Hungary dating from the Dark Ages two distinct types have been recognized: one, identified as Hunnish, is of moderate stature and long to medium-headed, with heavy-brow ridges, abnormally low, flat vault, long, flat, narrow nose, large, protruding cheek-bones and enormous jaws with weak chin; and the other, the Avar, is shorter, brachycephalic with a globular-shaped skull, shorter, broader nose, somewhat less prominent cheek-bones, and larger chin. Of these types the former is obviously the more primitive and closer to that of the palaeolithic hunters of Siberia; and it seems likely that these Hunnish invaders of Europe (to be identified also with the *Hsiang-Nu* who first appear in Chinese history about 800 B.C.) had originally been hunters and fishers in Siberia, who gradually adapted the horse nomadism of the central steppe-dwellers, as represented by the *Avars*, and subsequently expanded over the whole of the vast central region of the Old World.¹⁴ The *Huns*, then, may represent an early stage in the 'Mongolization' of the palaeolithic inhabitants of Siberia, rather than a branch of a genetically distinct leiotrichous or Mongoloid race, and the progressive 'Mongolization' of Asiatic peoples may have been going on since palaeolithic times in much the same way that we know the brachycephalization of European peoples has been going on; and in that case the common physical characteristics of the leiotrichous Group may be due as much to evolutionary parallelism as to genetic affinity. However that may be, it is reasonably certain, first, that the very specialized characteristics of some branches of leiotrichous man supposes a long period of isolation in some remote part of Central Asia, second, that the original area of characterization of leiotrichous man was in one or more regions of Asia north of the Himalayas, and that their expansion over the rest of Asia and Oceania and the Americas took place comparatively late, and third, that whereas all other domestic animals derive most probably from Hither Asia, the domestic horse seems to have originated somewhere in Central Asia, where the horse nomads of historic and sub-historic times lived on mares' milk as their principal article of diet.

The leiotrichous peoples of the present day may be divided into the following mainly geographical branches: (1) those of the northern forests, (2) the *Mongoloids* or desert nomads, (3) the *Orientalis*, (4) the south-eastern or Oceanic branch, (5) the *Amerinds* (6) the *Eskimoes*, (7) the *Lapps*.

1. This branch comprises the northern *Tungus*, the *Yukaghirs*, *Chukchis*, *Gilyaks* and other *Palaeasiatics* of eastern, and the *Ostyaks*, *Samoyeds* and other tribes of western Siberia. The *Tungus* and *Palaeasiatics* — characterized by their short stature, yellowish skin, moderately broad heads, broad, flat faces and prominent cheek-bones, and approximate towards the Hunnish type described above: in some tribes there is an admixture of Ainu blood.¹¹ The western tribes, on the other hand, were originally nomads from the region north of the Altai who moved into Siberia in comparatively recent times. They tend to have fairer skins and brownish hair, doubtless as a result of mixture at some time with Nordic blood.

2. This branch includes the *Mongols*, *Kalmucks*, *Buryats*, and southern *Tungus*. They have broad heads with prominent cheek-bones, long, lank hair and glabrous faces and bodies, and the oblique eye-aperture and characteristic 'Mongolian fold' covering the inner canthus of the eye. This seems to be an infantile characteristic found — — transitory condition among children of all races, but preserved in adult life only among some Asiatic *LEIOTRICHII*,¹² who on that account may be fitly classed together as *Mongoloids*. On the other hand many of these tribes have high, thin noses, like the *Kirghiz*, *Turkomans* and other Ural-Altaic peoples of Central Asia, who themselves display some Mongoloid traits, though fundamentally closer to the wavy-haired brachycephals or *ALPINES* of Europe and Hither Asia. Younghusband has noted how the traveller proceeding westward from Mongolia notices "a scarcely perceptible change from the round of a Mongolian type to a sharper and yet more sharp type of feature . . . and farther west still, among some of the inhabitants of Afghan Turkestan, we — that the Tartar or Mongol type of feature is almost wholly lost."¹³ Dudley Buxton has indeed argued that the high-nosed Mongolian type is also fundamentally more akin to the western *ALPINES* than to the *Oriental*s of China.¹⁴ But if this resemblance is due in part to mixture of peoples through this great desert corridor between East and West, it is equally well explained in terms of adaptation to a similar type of habitat¹⁵; and the general uniformity of the Mongoloid type all over eastern Asia is recognized by most anthropologists. It also provides an element in the very mixed population of Korea and Japan.

3. The Oriental branch comprises the vast populations of China, Tibet and the northern frontier of India, Burma, Siam and Indo-China. The *Southern Chinese* perhaps embody most

fully the typical characteristics of leiotrichous man: yellow skin, short, thick-set frame, broad head, flat face and broad, short nose, oblique eyes with the Mongolian fold, and 'infantile' lips; but how far these characteristics represent the original character of the leiotrichous stock before it emerged from its area of differentiation, how far a later adaptation to the hot, moist climate of their present habitat, it is hard to say.¹⁰ The taller and more heavily-built *Northern Chinese* approximate more to the desert nomad type. It was they who were responsible for the development of the Chinese civilization from its neolithic beginnings in Kansu and the valley of the Hwang-Ho, the chief elements of which had been brought from the Middle East *via* the Dzungarian Gate north of the Tien Shan.

4. The *Malays*, *Dyaks*, *Javanese* and other peoples of the East Indian Islands, Formosa and Nicobar Islands, as well as the *Hovas* of Madagascar, come from a further southern expansion of the Oriental stock, which only began in neolithic times, and is still going on. These Oceanic LEIOTRICHII generally resemble the *Southern Chinese*, but with modifications in a non-leiotrichous direction, partly at least as a result of intermixture with earlier indigenous or Indonesian populations.

5. The weight of present-day opinion inclines to the view that the Americas were peopled from the Old World in post-glacial times, and according to H. J. Spinden perhaps not earlier than the third millennium B.C., when civilization was already long since established in Hither Asia; but central Siberia was still in a mesolithic stage of industry; and it is this Siberian mesolithic equipment that is found among the earliest known communities in America.¹¹ Other authorities, however, put back the earliest migrations to immediate post-glacial times, or even to the last stages of the final glaciation; and though it is generally agreed that the great bulk of the *Amerinds* display a fundamental unity of physical type, it has also been claimed that there are traces in both North and South America, and particularly in Brazil and the plateau of the Andes, of a distinct racial type, long-headed, prognathous and with strongly marked brow-ridges. This type (the so-called 'Lagoa Santa race') is represented by a fossil skull, of uncertain date, from Punim in Ecuador, a somewhat similar skull (but without the superciliary torus) from the Confins Cave near Lagoa Santa in the Brazilian province of Minas Geraes, and by the existing *Botocudo* tribe of Brazil, who are short, long-headed people with wavy or even curly hair. It seems possible then,

though Hrdlička, the leading American authority, has pronounced to the contrary, that some of the earliest immigrants belonged to a 'pre-leiotrichous' stock, which might be described either as 'proto-Nordic' or 'Australoid'; or alternatively, they might have been derived from a Siberian stock which was 'pre-leiotrichous' only in the sense that it had not yet developed the later characteristics of leiotrichous man. Certain it is that the peopling of America took place gradually and by successive migrations, probably by way of the Aleutians rather than by the Bering Strait, and that the existing American peoples, in spite of a fundamental homogeneity, differ widely both from the Asiatic branches of leiotrichous man and among themselves, in stature, skin-colour, features and head-shape, some of the central American tribes approaching the tropical peoples of the Old World in respect of their low stature, dark brown skins, flat noses and prognathism, while some of the *Plains Indians* have the high stature, oval face, straight eyes and high, aquiline nose of a Nordic European. These great diversities of type must be the result, to a large extent, of adaptation ■ habitat over a comparatively small number of generations. One other point to notice is that many pleistocene mammals, such as the mastodon, mammoth, ground sloth and giant beaver, survived in America to within the last few thousand years, and that the horse and camel, original inhabitants of the New World, became extinct about the same time. It is suggested that this extinction was due to the activities of the newly arrived humans with their deadly hunting methods and equipment, the animals not having had time to adapt themselves to the gradually increasing formidableness of man, as they had in the Old World.²²

6. The origin of the *Eskimos* is uncertain.²³ Their pilous system, skin-colour and broad faces with projecting cheek-bones, mark them as ■ branch of the leiotrichous Group, and the tendency of present-day opinion is ■ link their origin with that of the *Amerinds*, from whom, however, they are distinguished by their long heads with high vault, often 'keeled'. This keeling, ■ well as their short stature and narrow noses, is to be attributed to their arctic habitat, involving, apparently, ■ modification of the masticatory process: a similar keeling has already been noticed in the Chancelade and other palaeolithic skulls. Perhaps as a consequence of their extreme northern position, they embody the extreme of the variability in head form which is characteristic of the *Amerinds*, whereas the Asiatic LEIOTRICHI are all

brachycephals.²² Western Alaska has been identified as their earliest known area of occupation; and their culture embodies many palaeolithic elements ultimately derived from Eurasia.

7. The *Lapps* belong to the same linguistic family as the *Finns*, who are now generally recognized as East Europeans; and they moved to their present arctic habitat in comparatively recent times. Yet they undoubtedly approximate in many ways to the leiotrichous physical type, and are described as somatically intermediate between LEIOTRICHI and European ALPINES. This seems due less to an admixture of blood than to the working of some unexplained environmental mechanism and modification towards an infantile character, as expressed in the proportion of limbs to body, sparseness of hair, small genitals, bulbous forehead with no superciliary ridge, weak chin, and low, childlike nose. Thus they are classed among the LEIOTRICHI in spite of the fact that they belong by descent among the European wavy-haired ALPINES.²³

V. MEDITERRANEANS or southern long-headed wavy-haired Group.

It was suggested in the last chapter that the Grimaldi 'negroids' may represent a first step towards a Mediterranean type, the fully evolved form of which is represented, rather uncertainly, by the Kom Ombo skull, and more definitely by mesolithic remains from Mugem in Portugal and from the Shukbah cave in Palestine—the latter having been brought to life and christened as 'Natufians', after the Wady-en-Natuf in which the cave is situated. This basic Mediterranean type is small and delicately built, with long, high head of medium size, smooth brow, small face, wide nose, weak jaw and some tendency to prognathism. Now this type seems to be an end product of the evolutionary process, several stages of which can in some cases be traced, and which continues on into post-glacial times. Thus in North Africa the primitive Afalou bou Rummel type of the late Pleistocene is modified in mesolithic times into the rather smaller and less rugged type represented by the fossils from Mechta el'Arbi, some of which show negroid and others a Mediterranean tendency, while in neolithic times skulls from Redeyef and Tebessa (on the borders of Algeria and Tunisia) are fully Mediterranean, and others from eastern Algeria, of uncertain mesolithic-neolithic age, are described as 'attenuated Afalou survivors', apparently with a tendency to brachycephaly.²⁴ Similarly in Palestine

a skeleton from the earliest Natufian level at a site called Erg el Ahmar is of more robust build than the later Natufians, with a more capacious brain and more developed superciliary ridges.¹⁵

Again, in later proto-historic times we find that the earliest skulls from al 'Ubaid (near the ancient Ur) are the larger, heavier Mediterranean type, with high cranial capacity, and prominent nasal bones, while in later, dynastic graves the smaller, more fragile type makes its appearance. In Egypt most of the early predynastic inhabitants, as at Badari, Merimde and Naqada, are of the small Mediterranean type. Only the skulls from Deir Tasa, which date from about 4,000 B.C., are large and heavy with considerable brow-ridges, and some with a tendency to brachycephaly: they have been compared on the one hand to the Afalon and Erg el Ahmar, and on the other to the early al 'Ubaid specimens; and this Tasian type or strain appears to be represented among the ruling class of the Pyramid age, though how far it modified the physical character of the mass of the population is a matter of some doubt.¹⁶ Such changes of physical type were certainly produced in some cases by migration and inter-marriage; and there is ample archaeological evidence of the movement of peoples into the valleys of the Nile and the Tigris-Euphrates during the fourth, and probably the fifth millennium B.C. But while these immigrants may have introduced a more robust racial strain, which survived in certain regions or strata of the population, the general picture seems to be of a gradual evolutionary change over the whole Mediterranean climatic belt, stretching from Gibraltar to India, from an earlier, large, heavy-boned type towards a smaller and more delicate type. This evolution, however, took place at different times among different peoples of the region, and also seems to have halted at different stages; so that some MEDITERRANEANS are much closer to the more primitive NORDICS than others are. Indeed as long as the dolichocephals were distributed over a continuous area from the Tropics to the frozen North, the Nordic and Mediterranean types merely represent the opposite extremes of a continuous series: a clear morphological division between them only developed when the brachycephalization of the central area separated them into two contrasted climatic regions, each with its characteristic population. A further point which arises here, is whether the fully evolved Mediterranean, as represented by the small, delicate Natufians and Badarians,

and by their modern successors in the same region, is not 'over-evolved', and so inferior in physical and mental energy to the robuster and more primitive type. It has been suggested that the big-headed Tasians were immigrants who introduced important new elements of culture into the Nile Valley, and Keith on the basis of the skull shapes and capacities of the two populations in late prehistoric times has argued that Sumer rather than Egypt must have been the cradle of civilization.⁴⁷ It would accord with the later history of these lands, as well as of India, if we assumed that the excessive heat of the riverine plains and valleys produced in course of time an etiolated physique, as embodied in the 'extreme' Mediterranean type.

The existing Group of brunet dolichocephals may be divided into the following branches: (1) *Mediterraneans* proper, (2) *Ethiopians*, (3) *Irano-Afghans*, (4) *Indids*, (5) *Indonasiens*. (1) The *Mediterraneans* proper are found in Spain, Corsica and Sardinia, sporadically in Greece and Asia Minor, and through North Africa, Egypt and Arabia. In North Africa, and to a less extent in Arabia, they are mixed with the taller, more robust Atlanto-Mediterranean type. (2) The *Ethiopians* of the mountainous area south of the Nile Valley occupy a position morphologically and geographically intermediate between the MEDITERRANEANS and the AFRICAN NEGROIDS, with whom they are largely intermixed. The pure Ethiopian type, as found among the *Gallas* and *Somalis*, is tall, fine-boned and with fine extremities; the head, face and nose are narrow, but negroid traits are seen in the everted lips and tendency to prognathism. An Ethiopic or Hamitic strain is also present in the very mixed population of southern Arabia, whence the *Amhara* crossed into Ethiopia in historic times. (3) The *Irano-Afghans* provide the principal population element in Mesopotamia, the highlands to the east, and the steppe country of Turkestan. They are taller and more robust than the *Mediterraneans* proper, with long, narrow face, hook nose, heavier jaw and prevaillingly dark skin. They are fairly close to the type represented by the skulls from al 'Ubaid, though the skull is somewhat smaller, and the vault lower; and there is a tendency to brachycephaly. Throughout the ages they have provided the warrior hosts which have swept down upon the cities of the plain, and ravaged and renewed them. (4) The *Indids* are roughly identical with the Aryan and Dravidian-speaking population of India. Their physical type varies between the small, dark-skinned, broad-nosed Dravidian tribes, such as the

Nairs of Malabar and the *Santal* of Chota Nagpur, who approximate towards the Australoid jungle tribes, and the tall, fair-complexioned Aryans, such as the *Rajputs*, *Khatri* and *Jats* with their high, thin noses and abundant beards, who are 'European' in everything except their skin colour: there has been considerable mixture of the former with the negroid and Australoid aborigines, and of the latter with later ALPINES and round-headed LEIOTRICHI coming down from the central Asiatic plateau. Long, high-vaulted skulls have been found in the prehistoric Indus cities of Mohenjo-Daro and Harappa, accompanied, especially at Harappa, by others which are brachycephalic. Though these particular *Indids* may have come down from the Irano-Afghan plateau, as so many invaders have done since, it seems likely that India at all stages was occupied by human groups of western as well as of south-eastern (Modjokerto-Ngandong-Australoid) origin, and that the process of racial blending and adaptation has been going on from the beginning.

(5) The *Indonesians* were formed by a south-eastern migration from India, while a strain in the mixed population of southern China, represented by the brunet *Man-tse* of Yunnan and Szechuan, was due to a direct eastward extension of the same stock. Skulls from Pho Binh Gia (Tongking), Tam-pong (Annam) and other caves in Indo-China indicate that the aboriginal population was largely replaced by a MEDITERRANEAN stock during mesolithic and neolithic times, which later in turn yielded to the pressure of brachycephal invaders from the North, and spread out to the south-eastern islands.¹⁰ A further mixture of these invading brachycephals with the *Indonesians* gave birth in turn to the ocean-faring *Polynesians*, a people of high intelligence and exceptionally fine physique, who adventuring forwards in their large sailing double-canoes in the course of the last millennium peopled the remotest islands of the Pacific. In this south-eastern quarter successive layers of population, AUSTRALOIDS, OCEANIC NEGROIDS, *Indids* or *Indonesians* and leiotrichous *Orientalis*, have produced a mixture and variety of racial types and a palimpsest of cultures which is the joy and the despair of the anthropologist.

VI. AFRICAN NEGROIDS or southern frizzy-haired Group.

This Group may be divided into four branches: (1) the Bantu-speaking peoples of Central and South Africa, (2) the true *Negroes*, divisible into two main limbs, ■■■ inhabiting the Guinea Coast

and Congo, and the others the upper Nile Valley," (3) the pygmy *Negrillos* of the equatorial forests, (4) the *Bushmen* and *Hottentots* of the Kalahari Desert and South-West Africa. In considering the origin of these several branches one is faced with two problems: one is that the *Bantus*, *Bushmen* and *Hottentots* are all supposed to have migrated to South Africa from some more northern district in historical times; yet in South Africa fossil remains of glacial age have been found which are regarded by the experts as morphologically ancestral to them; the second is that the *Bantus* are generally regarded as of mixed Negro-Ethiopic stock, and yet in the fossil record the 'mixed' Bantu type precedes the 'pure' Negro type. These difficulties may be lessened or resolved if we assume that the negro, with his frizzy hair, black or very dark skin, everted lips, and frequently slim build and bulging forehead, is not a primitive but rather a late, highly specialized evolutionary type, and secondly, that the effects of racial mixture and environmental adaptation are often indistinguishable, and that the same intermediate type may arise in either one way or the other at different times.

The *Bantus*, then, may be taken to represent an earlier stage of evolutionary specialization than the *Negroes*, as the *Negrillos* do a later; and if they are of mixed descent, the non-negroid element may be, partly at least, not so much Ethiopic as non-specialized early neanthropic. They have the frizzy or woolly hair of the negro type, and are predominantly long-headed; though there is also a short, brachycephalic type. They are generally of lower stature than the negro, and have flatter foreheads and browner skins: in their narrower and more prominent nose and lesser degree of prognathism they approach the 'European' standard; and there is a tendency to obesity, especially in the women. Possibly the absence of early negroid fossils may be due in part to the unsuitability of the equatorial forests to the preservation of such relics; for though the *Negroes* themselves may have become specialized at a comparatively late date, the *Negrillos*, like the parallel but very different *Negriloes* of Asia, must have required a very long period of isolation and adaptation to have developed their very specialized character. They are dwarfs with an average height of a little over $4\frac{1}{2}$ feet, with short, woolly hair of rusty brown colour, protuberant eyes, long, broad nose, and usually rather thin lips, the upper one long. The head-form is mesocephalic, the skin-colour variable, and the body is usually covered all over with a light down. They are

described as a very intelligent people with ■ special bent for music.

Of almost equally dwarf stature—the average height is given by Haddon as 5 feet $\frac{1}{2}$ inches³⁰—but of quite distinct physical type are the *Bushman*, who are characterized by hair rolled into tight 'peppercorn' knots, yellow skin, very small extremities, very small, long, low skull, orthognathous face with bulging forehead, prominent cheek-bones, very broad nose and small jaw; and there is a marked tendency to steatopygy, especially among the women. According to M. R. Drennan³¹ they resemble Neanderthal and Heidelberg rather than modern man in lower jaw development, foot-shape, formation of the back-bone and order of eruption of the teeth; and it is generally considered that they represent an extremely primitive type. On the other hand according to Keith their descent may be traced from the extremely well-endowed Boskop man in terms of a general reduction of stature and brain size³²; and it is clear that some of their present characteristics are the result of a regression to infantilism, whether this takes the form of 'foetalization' (i.e., slowing up of growth which enables the adult to retain his childish form) or, as Dreyer has argued,³³ to an acceleration of development which fixes adult characters at an early age. It seems likely then, that the *Bushman* are not ■ much 'primitive' as 'degenerate', that, like the *Lapps*, they are an end-product, ■ by-product of the evolutionary process, their physical decay resulting from their having been driven out of their earlier hunting grounds into a desert region of marginal subsistence by the swarming of more vigorous stocks. The kindred *Hottentots* are generally regarded as derived from a mixture of Bushman and Bantu blood; but Drennan disagrees, and derives them direct from Boskop Man, *via* the 'neolithic' skeletons from the Oakhurst Shelter (Cape Province), which are closer to the *Hottentot* than to the Bushman type: in other words, the *Hottentots* would represent a stage before the final Bushman stage of evolutionary degeneration.

VII. ALPINES or central broad-headed, wavy-haired Group.

The earliest-known tendency to brachycephaly is among the Krapina group of palaeanthropic fossils, and it is found more clearly among the early neanthropic fossils at Placard and Solutré, ■ also among the Afalou-bou-Rummel group from North Africa.³⁴ In the mesolithic age it is found partially developed among the fossils from Téviec and Hoëdic, islands off the Morbihan coast of

Brittany, and from Montardit (Ariège), and fully developed in the brachycephals from the famous skull burial at Ofnet in Bavaria, where twenty-seven truncated skulls were found closely packed together in a layer of red ochre and decorated with shells and teeth of stags. The combination, here and elsewhere, of long and broad heads may be due to racial mixture, and some of the later were doubtless descended from the earlier broad-heads. But in view of the marked increase in brachycephaly in several parts of Europe since the Dark Ages, to which reference has already been made, we must conclude that there is a progressive tendency to brachycephalization, as an alternative evolutionary 'line' to the Mediterranean tendency to smaller, slighter build, and which is associated with an Alpine or continental habitat. Certain it is that the brachycephals of Europe and the Near East are in most respects closer to the Nordic than the Mediterranean type, that they occupy the highlands and central zone while the coast regions are generally dolichocephalic, and finally, that the leiotrichous group of peoples, among whom the highest degree of brachycephaly is found, evolved most probably in the central Asiatic highlands. While the tendency to brachycephaly in Europe goes back at least to the upper palaeolithic, it has been increasing ever since; and it has nothing whatever to do with the 'neolithic invasion'.

The present-day wavy-haired brachycephals may be divided into the following branches: (1) *Alpines* proper, or *Cevenoles* of Deniker, (2) Sub-northern or Borreby (so named from the neolithic site in Denmark where skulls of this type are found), (3) *Dinaries*, (4) *East-Europeans* (or *Ladogans* of Coon), (5) *Armenoids* or *Anatolians*, (6) *Turanians*. (1) The *Alpines* proper or *Cevenoles* are found most typically in central and western France (except in the Dordogne) and western Alps, and ■ ■ element of the mixed population of central Europe and Italy. The physical type is short and thick-set, with brown hair, greyish eyes, sallow complexion, broad face, with rather heavy nose, and well-developed pilous system. (2) The Sub-northern or Borreby type is the mesocephal or brachycephal version of the Nordic, tall, heavily-built, with straight, generally fair hair, large, square head and turned-up nose: it is the closest to the primitive Solutré-Ofnet brachycephal type; and it is found principally in northern Germany, Denmark and south-west Sweden. (3) The *Dinaries* are found all over the eastern Alpine region from Switzerland to the Balkans and Carpathians, as well ■ in Syria, Asia Minor and the

Caucasus. They are tall, with black or brown wavy hair, and somewhat tawny complexion, with very broad head, usually flat at the back, long face and prominent nose. A blond variety in South Germany and central Europe is called Sub-Adriatic by Deniker and Noric by Lebzelter and Coon. (4) The *East-Europeans* include the great bulk of the *Poles*, *Russians*, *East Baltics*, *Rumanians* and *Bulgarians*. They are rather short, often with grey eyes and ash-blond hair, and square, rather broad, flat face with prominent cheek-bones. Among these populations there is doubtless some admixture of Mongoloid blood; but it seems certain that the *Fins* and other Finno-Ugrian peoples are fundamentally of pre-Mongoloid stock, and that the flat face and prominent cheek-bones are due, not to admixture of Mongoloid blood, but to what might be called their near-Asiatic habitat."

(5) The *Armenoids* are, so to speak, the Asiatic version of the European *Dinarics*, from whom they differ in respect of their higher, more convex noses, which become 'hooked' in advanced age, their rather darker complexions and more abundant beard and body hair. The theory that they were ancestral to the latter has now been given up, and it seems most likely that they were the result of a parallel evolutionary development. The earliest known *Armenoids* are the brachycephalic skulls from prehistoric Kish (lying between the Two Rivers east of Babylon), who were presumably immigrants or invaders from the North; and in this region of the Anatolian and Armenian highlands they are found in increasing numbers from the second millennium *a.c.*, and are now the predominant type. (6) Finally, the *Turanians* of Turkestan, Uzbekistan and the mountains to the South, represent the last eastward extension of the wavy-haired brachycephals. There is indeed progressive admixture of Mongoloid blood as one moves eastward; but the Seljuk and Osmanli *Turks* were not originally of Mongoloid blood, but rather brachycephalized descendants of the original Nordic population of central Asia.

This rapid sketch of the existing populations of the world has carried us somewhat beyond the limits of our theme, but some important views and conclusions about the original peopling of the world have arisen in the course of it. One is that the fossil evidence provides a quite insufficient basis for tracing the origin and descent of all existing races and racial groups. In the north-west quarter of Europe and Hither Asia the record is indeed fairly extensive, ranging from the earliest neanthropic fossils from Mount

Carmel to the cemeteries of the Middle Ages, and we can construct for ourselves a family tree of some respectability. In the far south-east corner also of Indonesia and Australia the remains, though scanty, form a recognizable series leading from primeval man to the existing populations. But elsewhere over the vast extent of Asia the darkness of our ignorance is lit only by a few chance and uncertain gleams, while the evidence from Africa, though fuller, remains enigmatical. In dealing therefore with the origin and classification of the vast populations of Africa, most of Asia and the Americas, we have to rely mainly on other considerations.

Racial evolution, like the evolutionary process generally, is composed of the two factors of orthogenesis or specific hereditary trend and response to environment or habitat, and is likely to follow a parallel or converging course in unconnected regions. There is fossil evidence of the separate evolution of neanthropic man from a primeval stock in south-eastern Asia and Australia; and on other grounds we may conclude that the pygmy NEGROIDS of Africa and of south-east Asia and Oceania represent two parallel adaptive trends in a similar region of tropical forest; and the Mongoloid traits of the *Lapps* may be explained in a similar way. From this it follows that a classification of races in terms of heredity alone is impracticable, except on a very limited scale of time and place: in the wider context we must fall back on more general evolutionary conceptions.

If we classify existing races and racial groups in terms of greater or less evolutionary development and specialization, the first and lowest place is occupied by the AUSTRALOIDS. Next come the *Ainu* and the NORDICS; and two divergent developments from the early Eurasiatic stock lead to the broad-headed ALPINES and to the smaller, more finely built MEDITERRANEANS. On either side of this 'central trunk' of wavy-haired races extend the two more specialized branches of the LEIOTRICHI of Asia and America, and the woolly-haired NEGROIDS of Asia and Africa, the former adapted perhaps originally to a steppe habitat with extremes of both heat and cold, and the latter to one of tropical heat. Among the LEIOTRICHI the *Mongoloids* of the Asiatic steppe and the *Plains Indians* are morphologically closest to the developed Nordic-Alpine or 'Caucasian' type, and the *Southern Chinese* and *Indo-Chinese*, and the 'primitive' hunting peoples of the Arctic and of the Amazon forests perhaps farthest off from it; but, not knowing the original type of leiotrichous man, we cannot

say surely in what direction further specialization has taken place, nor decide whether the more 'Caucasian' features of the Mongolian steppe-dwellers and the *Plains Indians* are 'original', or due to re-adaptation or racial mixture. Among the two groups of woolly-haired peoples the process of specialization is represented in one case by the series—*Tasmanians*, *Papuans*, *Negritos*, and in the other by the series—*Bantus*, *Negroes*, *Negrilloes*, with the *Hottentots* and *Bushmen* at the end of another, separate series. Evolutionary specialization is not to be associated with progress in a cultural, or even a biological sense. The *Bushmen*, *Negritos* and *Negrilloes*, and the *Lapps* and *Palaeasiatics*, are all, in different ways, evolutionary dead ends; and even what may be called the 'extreme Mediterranean type' probably represents the debilitation of the more robust early neanthropic constitution. On the other hand the still continuing expansion of the Asiatic LEIOTRICH is sufficient evidence that they are not 'over-specialized'.

Finally, another classification may be made in terms of the time-order; and this is of importance to our view of the stages in which the world was peopled in glacial and post-glacial times. According to present evidence the proto-Australians are at least as old as the earliest neanthropic peoples of the West, and perhaps a good deal older; and from the present geographical distribution of the *Negrilloes* it seems to follow that a 'proto-Negrito' race had also been differentiated in the earlier part of the Würm glaciation, their pygmy and negroid specialization going back perhaps into the palaeanthropic stage of evolution; and the other OCEANIC NEGROIDS must also have had a very early origin. Over Europe, Africa and a great part of Asia the emergence of neanthropic man seems to have taken place after the first extreme of the Würm glaciation; and the earliest neanthropic types of Africa and Asia seem to have been closer to the contemporary 'proto-Nordics' or 'proto-Europeans' than to the existing African and Asiatic types. Only at the close of the Glacial Age do the proto-types of the present Mediterranean and Negro races appear, though it may be that the character of the habitat in which the *Negroes* and *Negrilloes* were differentiated is responsible for the absence of earlier remains. The *Bushmen* also seem to embody a quite late degeneration from the Boskop type of late Glacial times. In Asia the broad-headed LEIOTRICH, though their origins may go back far into the Pleistocene, are only identifiable in post-glacial times; the original peopling of the Americas (with the possible exception of the *Lagoa Santa* race) is of equally late

date; while the expansion of the LEIOTRIGHI to the West and South and South-East, and into Oceania, belongs to even later, historic times. Finally, the development of a continental wedge of broad-headed peoples through Europe and Hither Asia, though the tendency to brachycephaly can be traced back to the palaeanthropic stage, belongs mainly to the last three millennia.

NOTES

¹ *The Races of England and Wales* (1923), pp. 72-73.

² *Op. cit.*, p. 11. In spite of the admirable principles established in his first chapter Dr. Coon in the body of his work seems to me to rely far too much on amalgamation or race mixture to explain the emergence of new racial types, the at least equally important factor of environmental response being almost entirely neglected. This criticism applies still more forcibly to his fundamental conception of a *Homo Sapiens* stock going far back into the Pleistocene, and blending in late Glacial times with an entirely separate palaeanthropic or Neanderthaloid stock, to produce the upper palaeolithic peoples of Europe, and many of their later and present-day ———. For not only is the alleged fossil evidence for such an early emergence of a neanthropic stock wholly unreliable, and rejected by most present-day authorities on the subject; but the very conception of two (and only two) 'primary stocks' being traceable through all later modifications of type contradicts the definition of race as 'an entity always in process of change'. I should add that I am largely indebted to Dr. Coon's book in the composition of this chapter.

³ On the brachycephalization of Europe during the last two millennia see *l'Anthropologie*, Vol. 44, p. 643, Vol. 45, p. 666, Vol. 49, pp. 166-167 and 761, and Vol. 50, pp. 253-255 and 545-546.

⁴ If it is a fact that increase of height tends, in Europe, to go with increase of head-length, then the tendency for some European town populations to be longer-headed — well as taller than the country populations of the same region would illustrate the direct effect of habitat on head-form. Cf. E. Pittard, *Les Races et l'Histoire* (1924), pp. 27-29.

⁵ *Op. cit.*, p. 45.

⁶ *Op. cit.*, pp. 425-431 and 448.

⁷ See Boule, *op. cit.*, p. 483.

⁸ See *l'Anthropologie*, Vol. 50, p. 583. Kaudern also argues that there — a land link between South Asia and Africa in the Pliocene, by which the ancestors of the African Négrilloes passed into Africa. But this hypothesis, as the reviewer, H. V. Vallois points out, is contrary to all the evidence.

⁹ Cf. Boule, *op. cit.*, p. 418, who, however, concludes: "Il faudra de longues et patientes recherches pour mettre de l'ordre dans ce chaos."

¹⁰ J. Deniker, *The Races of Man* (1900), p. 381. A. H. Keane, *Man Past and Present* (rev. by A. H. Quiggin and A. C. Haddon, 1920), pp. 290-291.

¹¹ See John L. Myres, *Primitive Man, in Geological Time in The Cambridge Ancient History*, Vol. II (2nd. edn., 1924), pp. 22-23.

¹² See Coon, *op. cit.*, pp. 226 et seq.

¹³ See Coon, *op. cit.*, p. 231.

¹⁴ See Deniker, *op. cit.*, p. 78.

¹⁵ *The Heart of a Continent* (1896), p. 118.

¹⁶ *The Races of Asia* (1925), Chap. II.

¹⁷ Cf. A. Davies, *A Re-Survey of the morphology of the nose in relation to climate in the Journal of the Royal Anthropological Institute*, Vol. 62 (1932).

¹⁸ According to von Eickstedt the leiotrichous inhabitants of Indo-China represent the first stage in the differentiation of the Mongoloid or leiotrichous stock, and lack the specialized Mongoloid traits, especially the Mongolian fold. Cf. *l'Anthropologie*, Vol. 45, p. 176. But might not their 'infantile character' be regressive rather than primitive?

¹⁹ *First Peopling of America — a Geological Problem in Early Man.* Cf. *l'Anthropologie*, Vol. 49, p. [] on the Expeditions of the Smithsonian Institution in Alaska.

²⁰ See Edwin H. Colbert, *The Pleistocene Mammals of North America and their Relations to Eurasian Forms in Early Man.*

²¹ See Kaj Birket-Smith, *The Eskimoes* (1936). But it is now generally agreed that they derive from north-east Asia, and that the earliest traces of their culture are in the Bering Sea area.

²² See A. Hrdlička, *Early Man in America; What have the Bones to say? in Early Man.*

²³ See Coon, *op. cit.*, pp. 298-306.

²⁴ See Coon, *op. cit.*, pp. 69-70 and 99.

²⁵ H. V. Vallois, *Les Ossements natoufiens d'Erq-el-Ahmar in l'Anthropologie*, Vol. 46, pp. 537-539.

²⁶ Coon, *op. cit.*, p. 93 [] that the 'Tasians' were not important in the ultimate formation of the Egyptian people, for in subsequent times they seem, both culturally and racially, to have disappeared.' On the other hand H. V. Vallois, *Les Races Humaines* (1944), pp. 39-40, states that this 'Anatolian' invasion permanently modified the physical type of the Nile population: 'la [] a augmenté, le crâne s'est un peu élargi, la face est devenue plus massive et le nez plus étroit.' Cf. also Keith, *op. cit.*, p. 230.

²⁷ *Op. cit.*, p. 243.

²⁸ Cf. Boule, *op. cit.*, p. 418.

²⁹ H. V. Vallois, *op. cit.*, ch. III, distinguishes five 'sub-races' of what he calls the 'Melano-African' race: Sudanese, Guinean, Congolese, Nilotic, and South-African, which last comprises the Bantu-speaking peoples. Probably the differences between the Negroes in

different regions of Central Africa are not much less than those which lead us to distinguish the inhabitants of Europe into a number of separate 'races'; but at least the Bantu-speaking peoples seem to differ a good deal more thoroughly from any of the other four 'sub-races' than the latter do among themselves.

²⁰ *The Races of Man and their Distribution* (N.D.), p. 10.

²¹ *L'Anthropologie*, Vol. 42, p. 491. Cf. *ibid.*, Vol. 50, p. 541.

²² Cf. *ante*, p. 128.

²³ *L'Anthropologie*, Vol. 48, p. 180.

²⁴ Cf. *ante*, p. 127.

²⁵ It is noticeable how the Czar Nicholas II and his children were typically Russian in this respect, though they were almost pure Germans by descent, one of the parents in each of the previous six generations having been German or Danish.

CHAPTER VII

THE CULMINATION OF PALAEOLITHIC CULTURE IN THE WEST: FRANCO-CANTABRIAN ART

IN A PREVIOUS chapter I surveyed the general development of the upper palaeolithic industries in Europe and Hidier Asia from their earliest Châtelperronian phase to the latest period, when a number of distinct cultures developed in different parts of Europe and Asia; and I gave a rather fuller account of the 'Gravettian' culture of South Russia. In the present chapter I propose ■ consider more particularly the later phases of the palaeolithic culture in the classical regions of France and Spain, where it reached its highest expression in the industry and art of the Magdalenian age. The chapter falls into two parts: first, a brief account of the Magdalenian industry, and of the manner of life of those who practised it; second, a consideration of the art which reached its culmination in Magdalenian times, but had a long previous history, ■ yet hardly touched upon.

The Magdalenian culture extended into Switzerland and South Germany and south-western Spain; but its main centres were in southern France, in the Dordogne and the departments of Haute Garonne and Ariège immediately north of the Pyrenees, and in the eastern parts of the Cantabrian mountains (Provinces of Santander and Viscaya) in northern Spain. All these three regions of limestone formation cut through by river gorges abound in caves and rock shelters such ■ the late palaeolithic hunters favoured for dwelling-places, and in all of them there was ■ long previous tradition of habitation and of artistic creation. Yet industrially the Magdalenian culture made a complete break with the immediate past. For whereas in the Solutrean period the working of flint ■■ brought to its highest pitch of perfection, the flint tools of the Magdalenians are in general carelessly made and inferior to the earlier late palaeolithic types; but in compensation for this the industry in bone, neglected by the Solutreans, was developed with the utmost skill and art. This degeneration of one type of craftsmanship, accompanying the



PLATE I One of the 'Chinese' horses from the Lascaux cave



development of another craft employing a new kind of material, is a common occurrence at every stage of culture, and expresses the transference of human interest and values. All the weapons and implements to which magic potency attached were now of ivory, bone and reindeer horn, and among them the Magdalenian craftsman concentrated all his care and art: flint tools had only a subsidiary, workaday importance. Besides the sharp, slender rods adapted for fitting to the wooden shaft of javelins and lances, and the needles and bodkins with pierced eyes excellently finished by polishing with sandstone, the most important implements of the Magdalenians, and those on which they lavished most care, were their harpoons, throwing-sticks and shaft-straighteners. These last were sections from the antlers of reindeer or stag, with one or more holes cut in them, and usually decorated with elaborate carving. They are sometimes called *bâtons de commandement*, it being supposed that they were sceptres or symbols of authority. But similar implements are used by the modern Eskimoes to straighten the wooden shafts of their javelins and throwing spears, and there can be little doubt that these so-called *bâtons de commandement*, whether or not they had some other ceremonial significance, were used for the same purpose.¹ The shaft, after being wetted, was passed through a hole and then tightly bound into the correct alignment and left to dry and set. The carving, usually of animal shapes, expressed the magical importance of the operation. A similar mystical feeling inspired the often highly artistic animal carvings on the throwing-sticks. Implements of this kind, used to impart additional force and accuracy to the missile's flight, are still used by the Australians, Eskimoes and South American Indians. Though the bow was in use by this time among the peoples of the African cultural province, it seems likely that the Magdalenians were unacquainted with it.

The earliest harpoons were shaped like javelin-heads, with a saw-like denticulation along one or both edges. Later they were made with a row of well-curved, fully developed barbs, first along one edge and afterwards along both edges. They vary greatly both in size and design, and are often decorated with patterns or conventional figures of fish. From this elaborate development of the harpoon industry we may judge that among the later Magdalenians at least fishing was as important a means of livelihood as hunting on land. Probably, like the Eskimoes, they had a fishing season and a hunting season at different times of the year. The engraving of a tunny, or some similar type of fish, on the



Fig. 21. Magdalenian bone tools and weapons: (1-3 and 8) javelin-heads; (4-7 and 9-14) harpoons; (15-18) needles. (1-14 after Breuil, 15-18 after British Museum Stone Age Guide.) $\frac{1}{2}$ scale

walls of a cave at Pindal, near Santander, indicates that they did not confine themselves to the rivers and sea-shore, but ventured out to sea, probably on primitive rafts such as the Tasmanians once used to cross open stretches of sea to neighbouring islands; or it is possible that they were able to construct more seaworthy craft, though whether in this they were pioneers or imitators it is impossible to say. As far as we know, the earliest development of ship-building took place in the regions of the Persian Gulf and Red Sea. But the Magdalenians were the first sea-fishermen of north-west Europe.

Certain so-called 'tectiform' drawings on the walls of caves may represent huts or tents, though it is rather more likely that they represent the traps used in hunting animals. But there is definite evidence that there were regular summer camping-grounds to which the hunters gathered in large numbers year after year; and it may be assumed that they then built themselves shelters of boughs or skins. Such a camping-ground was the open station at Solutré, where a field under the shelter of a prominent cliff has been found to contain an enormous accumulation of animal bones, together with human remains, layers of ashes and hearth-stones, and implements belonging to every stage of the later hunting age. Here and at similar places of rendezvous elsewhere we may suppose these early Europeans gathered in their families and tribes, probably at the opening of the summer hunting season, and that ceremonies took place of a similar kind to those reported of the Australian aborigines and Indian hunting tribes of the North American plains: that is to say, there were dances and initiation ceremonies and other magic performances, and consultations between the wizards and leading men of the various tribes, in the course of which the traditional lore was communicated and confirmed, or perhaps through the influence of some commanding personality added to or amended. Some forms of cultural linkage must go back to the earliest hunting age; but it seems probable that such large-scale tribal meetings only developed at a late period, after mankind had attained a wider control over its physical environment, and when there were local 'schools of art' in widely separated districts, which were yet linked together by a shared and communicated tradition. The character of their art also makes it evident that the Magdalenians, in spite of the severe climatic conditions and the dangers and precariousness of their savage existence, must have 'flourished' in the full sense of the word through a long succession of generations.

The caves, or rather the cave-mouths, were occupied as winter quarters, when long hunting expeditions were no longer possible. During this time the occupants probably engaged in fishing, but, like the modern Eskimoes, would have lived largely on the accumulated store of summer food, which the intense cold would have naturally preserved from rotting. They used lamps. One has been found at La Mouthe (Dordogne) in the form of a pebble of fine, close-grained sandstone ground into a shallow bowl, and which had some carbonaceous matter still adhering to the inside. Similar bowls, fed with blubber and with wicks of dried moss, are still used by the Eskimoes in their winter quarters to provide both light and heat; and the absence of any sign of smoke on the cave walls is evidence that they were kept trimmed, by the palaeolithic hunters as by the modern Eskimoes, so as to remain smokeless.¹ For protection against the cold they had garments of skins sewn together with bone needles; but inside their caves they may have gone naked, ■ the Eskimoes do in their winter houses; for they are always shewn ■ in their drawings and engravings. Probably they smeared their bodies with grease mixed with red ochre to keep out the damp and cold; and besides skins they wore necklaces and bracelets and pendants, of perforated shells and teeth, and probably also hairpins.² Here they were following a much older tradition. But it is only in this latest age that such elaborately designed necklaces were made ■ that found in one of the Grimaldi caves and reconstructed by Dr. Verneau in its original form. It consists of a double row of fish vertebrae and an outer row of shells, the whole linked together with triple-pierced deer teeth set at regular intervals.

It was mainly during the comparative idleness of the winter season, we may suppose, that the Magdalenians turned their thoughts and energies to art, expressing in plastic form their summer memories and anticipations, the delights and terrors of the past and their hopes for the future. Here they carried on without any break of continuity the earlier tradition; and the recent discovery of the painted cave at Lascaux (on the Vézère, some fifteen miles upstream from the well-known cave-centre of Les Eyzies) has revealed the richness and variety of these earlier stages. The age of the Lascaux paintings is indeed still a matter of doubt, though they certainly ■ to antedate the fully developed schools of Magdalenian art. According to the abbé Breuil they range over ■ period of some 13,000 years, from the Aurignacian

are those from Laussel (Dordogne), executed in low relief on small flat blocks of limestone, one of which represents a woman holding a bison horn, the head featureless, and the body of the usual corpulent type carefully carved and polished; another a male figure posed perhaps in a throwing attitude, and with the indication of a girdle round the waist. The latter is unique of its kind, and it is almost ■ if the artist had consciously intended to portray the two contrasted ideas of the fertile female and the hunting male. At any rate the female figure is about the last of the 'mother-goddess' images of the West; and while sexual motives and representations of the female body are occasionally found at later dates, they rarely if ever inspire works of much artistic importance: all the skill and imagination of the western artists were concentrated on the representation of animal forms. This is conspicuously so at Lascaux, where, save for one crudely drawn representation of a man, all the paintings are of animals, mainly oxen, deer, bison, stag, horse and ibex. Through the successive groups or stages distinguished by Breuil one can recognize a general progress in technique and artistic ability, from the early rather crude outlines and flat washes to modelling in two colours, more lively and accurate drawing, and representation of movements. Particularly impressive are a series of horses with barrel-shaped bodies and short legs in fawn, outlined and touched up in black or dark brown, and which strongly resemble those depicted in early Chinese paintings; some aurochs bulls treated in bold black outlines of liquid colour, and in some cases with the head and part of the body spotted; a 'frieze' of small, shaggy ponies in black wash; a set of bulls in black and red; and a 'jumping cow' in black, with the hind legs bent upwards, probably to clear the earlier painted frieze of ponies below. A couple of charging bison, and a 'frieze' of stags' heads outlined in red, remarkable for its artistic grouping—the painting is supposed to represent the animals swimming ■ river—probably belong to the Magdalenian age.

It was at one time supposed that the Solutrean period caused a break in the development of the pictorial and plastic arts of the West; but recently ■ notable series of animal carvings in relief at Le Roc (Charente), as well as sculptures of similar type from Les Bourdeilles (Les Eyzies), have been assigned to this age; and the discoveries at Lascaux also bear witness ■ the organic unity of west-European art from Aurignacian times to the close of the Magdalenian age. Some of the Le Roc carvings, which seem

originally to have been coloured, are masterly in their portrayal of rapid movement, particularly one of a man with a spear or stick over his shoulder fleeing from a charging musk-ox: in one case it is to be noticed that the head of a sculptured ox has been chipped away, and the head of another species of animal substituted. Whether these sculptures were the work of the 'Solutreans', or of the earlier people they invaded—whether indeed we are right in regarding the Solutrean episode in terms of an invasion in the first place—is *hors de propos*. Possibly the celebrated painting of a woolly rhinoceros in red at Font-de-Gaume (Dordogne), and the engraving of a bison at Hornos de la Peña, belong to this same age.

Though the discoveries at Lascaux have revealed an unexpected richness of pre-Magdalenian art, it remains true that the finest examples in every branch of art belong to the Magdalenian age. Three main periods within it may be distinguished; and the art of the first of these takes three main forms: engraving, painting, and sculpture in high relief. In the engravings the three-dimensional form of the animal is conveyed with admirable boldness and vigour to the flat surface, the various parts of the body being drawn organically, and its curves being sometimes further indicated by a shading of delicate incised lines. In the paintings in monochrome the structure of the body is similarly indicated either by internal lines and shading, as in the painting in black in the cave at Niaux (French Pyrenees), or by 'stump' drawing, as at Altamira, where the figure of a bison in chiaroscuro is one of the masterpieces of palaeolithic art; and the painting of an ibex in black at Niaux is hardly inferior. The most remarkable examples of sculpture are the clay carvings of bisons at Tuc d'Audoubert (French Pyrenees), the frieze of horses at Cap Blanc (Dordogne), and the horses' heads from the recently discovered rock-shelter at Angles-sur-Anglin (Vienne), which is still in process of excavation by Professor Garrod and Mlle. de St. Mathurin.⁴ It is to be noted of the first that the clay has not been modelled, as one might expect, but carved as though it had been stalagmite or stone. Remarkable for the very fact of their survival in this fragile material for the unnumbered centuries that separate us from the Glacial Age, these clay bisons are artistically of less importance than the frieze of animals, mostly horses, carved almost life-size along the walls of the rock-shelter at Cap Blanc, and cut out to a background a foot deep. The quality of the work is indeed difficult to assess owing to the weathering of the

rock, which has obliterated its finer details, and partly buried it behind deposits of stalagmite. But in respect of the depth and boldness of the cutting, and the monumental conception of the series as a whole, this frieze is an extraordinary achievement for sculptors who had only flint tools to work with. Many tools of abnormal size, comparable with the picks, hammers and axes of modern sculptors in stone, were found on the site, and were doubtless those used by the artists at their work. Finally the horses' heads from Angles-sur-Anglin are not only remarkable from their situation, well north of the known centres of palaeolithic art, but for their artistic truth and vigour, hardly excelled by the masterpieces of any subsequent period.

In the second phase there is a marked decline in the painting, a coarse outline or flat wash taking the place of the more advanced technique; and the silhouette even is less carefully and faithfully rendered than in the pre-Magdalenian period. On the other hand this is the culminating period of engraving art, both on the cave walls and upon tools and fragments of stone and bone. Unrivalled for truth and freedom and delicacy, and the ability to convey in line not merely the shapes of creatures but their fugitive movement and expression, is the collection of engravings on slabs of stone found at Limeuil (Dordogne); and these can be paralleled with works of equal excellence from many other stations, such as the celebrated engraving of stags and salmon on an antler from Lorthet (Hautes Pyrenees), or the perhaps still more remarkable engraving on stone of a group of horses from Chaffaud (Vienne), where the attempt is made to represent impressionistically a herd of animals in movement. To the same period belong the carvings in the round on the handles of throwing-sticks and other tools and weapons, many of which are admirable for their lifelike vigour, as well as for the way in which the animal's pose is adapted to the special form of the implement, or its handle. The occasional contemporaneous use of spirals and geometric patterns seems to contradict the assumption that all such forms arise by conventionalizing the shapes of natural objects.

In the final phase the style of engraving becomes mannered and conventionalized. As examples of this style we have the three mammoths drawn on the cave-walls at Font-de-Gaume, where the natural shape of the animal is represented in highly exaggerated form. These engravings lack the vigour and vitality of the earlier period, but have a delicate, impressionistic appeal of their own. Contemporary with them are the celebrated

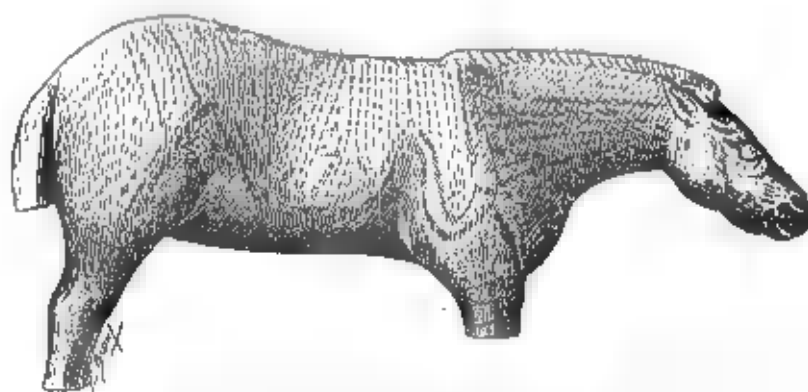
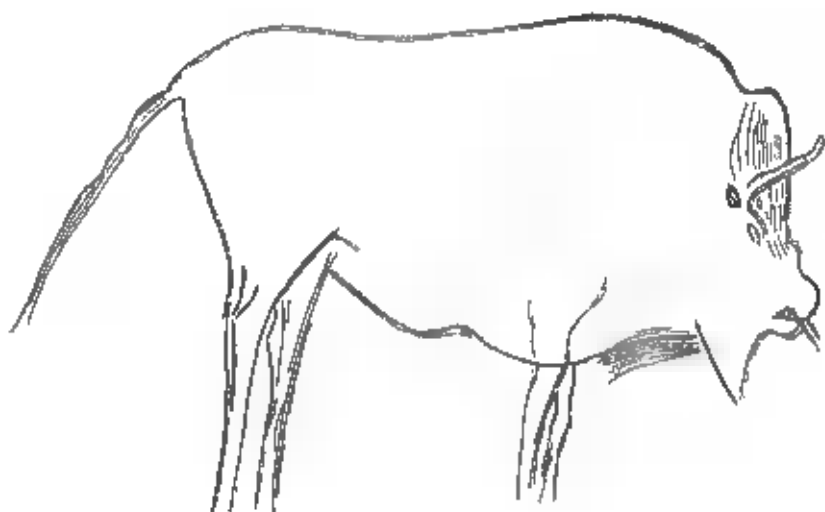


Fig. 22. (a) Early engraving of a bison from the cave of Hornos de la Peña, after Breuil. (b) Ivory statue of horse from cave of Espélungues at Lourdes, after Breuil

polychrome paintings of Altamira and Font-de-Gaume, which are probably the best known of all the works of palaeolithic art. They might perhaps be called 'decadent', in somewhat the same way as the paintings of Tintoretto might be called decadent. Certainly they are mannered: in all but a few of the finest examples there is a theatrical flourish about the exaggeration of

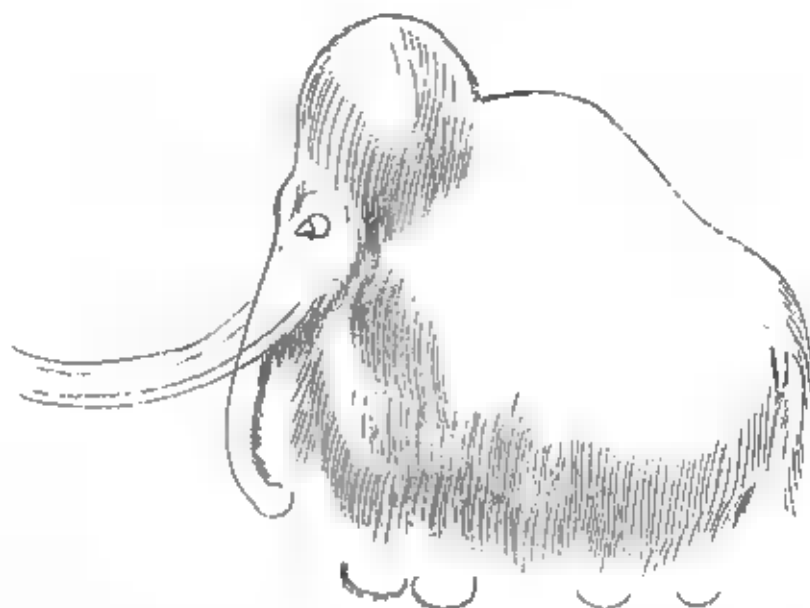


Fig. 23. Late engraving of a mammoth from the cave of Font de Gaume, after Breuil.

the animal's bulk and characteristic forms. But what a magnificent manner it is! If the criterion of greatness in a work of art is the extent of its appeal to people of widely different tastes and aesthetic tradition, then surely these polychrome paintings are, and will remain, masterpieces of art absolutely, without any qualification of 'primitive' or 'palaeolithic'.

After this brief survey of the successive phases of Franco-Cantabrian art let us turn to consider some of its general characteristics, and first its variety and limitations. As we have already noticed, it includes painting in monochrome and polychrome in a wide variety of styles and techniques, engraving on stone and bone, monumental sculpture in high and low relief, and small-scale carving in the round in stone and bone and ivory. Two main branches are usually distinguished, one comprising the paintings, engravings and sculptures inside and at the entrance to caves, and the other the small-scale carvings and engravings on weapons and pieces of stone and bone which the French call *art mobilier*, and to which Burkitt has given the name 'home art'. There is also a wide variety of styles and subjects; for besides the

animal paintings and carvings there are representations of birds, fishes and plants, and, in the earlier period, of the human form, especially the female form, pictures too of human-animals, or men disguised as animals, weird sketches and caricatures of humanity, mostly hasty scrawls, which are yet not devoid of artistry; patterns and designs which may or may not have representative significance; and finally, figures combined into groups, such as the engravings from Lorthet and Chaffaud already mentioned, the stags' heads from Lascaux, and the heads of chamois engraved on the tines of an antler from the cave of Gourdan (Haute Garonne). Principally, however, it is an art of the single animal shape; and this limitation constitutes its peculiar excellence; as we may see by comparing it with the eastern Spanish style of art, which, in spite of its vivid portrayal of scenes of action, remains primitive in respect of its technical equipment for such large compositions, with their complex problems of grouping, modelling and perspective; whereas the greatest Magdalenian artists were in possession of a technique completely adequate to their more limited subject-matter.

With regard to the techniques employed we may notice that the colours used range from yellow through orange, vermilion, and crimson ■ mauve, brown and black: the yellow was obtained from ochre, the red from peroxide of iron, and the black from manganese. Sometimes the colouring material seems to have been used, like a crayon, on ■ previously wetted surface; but usually it was ground up in water, oil or grease, and then applied to the rock surface either with the fingers, with ■ brush made of a tuft of fur or feathers, or perhaps from the tail of an animal, or by spitting or projecting it through a blow-pipe. Often these different methods were combined, the outline being drawn with the finger, the internal washes put on with a brush, and then perhaps the mane given ■ distinctive and characteristic appearance by means of the blow-pipe. Bone tubes containing traces of colour, and stone palettes, have been found in some caves.

In an article in the *Proceedings of the Prehistoric Society** P. A. Leason, an Australian artist, has pointed out that in many of the animal paintings and engravings of the Magdalenian age there is ■ lack of naturalness in the treatment of the legs and feet: the animals appear to be standing on tip-toe, and there is no suggestion of weight or muscle-tension. In several cases also the animal seems to be viewed from below, showing the underside of

the foot and a large part of the belly; and in some cases the near legs appear to be foreshortened. All these peculiarities would be explained, Mr. Leason suggests, if we supposed that the artist drew from a dead model, stretched out on the ground before him. No one who studies the drawings and photographs illustrating Mr. Leason's article with an unprejudiced mind can fail to be impressed by the cogency of his argument, especially in relation to some of the late Magdalenian polychrome paintings, such as that of the hind, at Altamira. On the other hand, as W. H. Riddell points out in a subsequent article in *Antiquity*,⁴ the use of models is a modern idea, which it is hardly conceivable was entertained by these palaeolithic artists, working usually in remote, dimly lit caves, where the use of a model would have been wholly impracticable. We must rather conclude that the artists of this particular school, or at least the founder of it, depended largely on their visual memories of the animals lying dead in front of them. Indeed it is only then that they had the opportunity for close observation, such as the best of these paintings and engravings imply. Mr. Riddell also suggests that the 'tip-toe' attitude may have been due to the visual memory of the spoor of the animal, which would have been much more familiar than the hooves or feet themselves. There are two points of interest here. First, there is the fact of the artist's dependence on a (to us) exceptionally vivid visual memory, what the psychologists call the 'eidetic image'; and second, there is the fact that there were distinct 'schools' of palaeolithic art, one of which especially relied on a study of the dead animal before it was cut up for food—though how far in any particular painting the style and pose are dependent on the artist's own observation it is difficult to say; for, as Mr. Riddell points out, in the 'purely traditional' art of China and Japan animal forms may be effectively rendered by artists who have never studied, or even seen, the living, or dead animal.

All art implies tradition; and the discoveries at Lascaux and Angles-sur-Anglin have placed the development of the Franco-Cantabrian art tradition in a new perspective, by emphasizing the importance of local schools as well as of the temporal succession. Certain works, such as the 'stump' drawing of a bison at Altamira, the late polychrome bison from the same cave, and some of the incised drawings of stags and reindeer from Limeuil, which stand out above the rest for technical perfection and imaginative power, we may justly attribute to individuals of genius, whose

work was imitated by less gifted followers; and to such men of originaive genius must also be ascribed the inventions and changes of technique which mark the successive schools or phases of art. Whether or not the artists formed a recognized class or caste within the community, they were certainly professionals, in the sense that they devoted a great deal of their time and energy over a course of years to their special calling. At Limeuil a large number of limestone fragments has been found with incised drawings on them, which in many cases seem to have been practice studies with alterations and corrections; and these suggest an *atelier* where young artists were learning their craft under the direction of a master. But if we think of 'schools' of palaeolithic art, we must do so in terms mainly of inarticulate example and imitation. It is noticeable how, except in a few rare examples, the artists of even the most advanced Magdalenian school never quite mastered the problem of representing the position and spatial relations of the four legs of an animal; and this may be taken as evidence of the inability of the few artists of individual genius to communicate in general terms the knowledge they had intuitively acquired. The intuitive character of their art is also strikingly displayed in their ability to depict the forms of animals without reference to their natural axes of direction; and this strange habit of drawing an animal as it were standing on its tail, or head, or upside down, is closely connected with the habit of 'recognizing' animal shapes in the accidental irregularities of the rock surfaces, and converting these hinted resemblances into works of art. Intensity of visual imagination took the place of conceptual knowledge; and the marvel is that by this means the savage artists reached a stage of technical accomplishment in the projection of the three-dimensional figure on to a flat surface, that surpasses anything the Egyptians did, and the Hellenes only attained to occasionally and as it were by accident. A definite advance was made only with the beginning of the scientific study of perspective in Italy a bare five centuries ago.

The Lascaux paintings suggest that Dordogne may have been the original home, not only of the Franco-Cantabrian, but of the East Spanish and later African schools. For it is here that one finds the earliest stages of the convention which represents the horns or antlers of an animal drawn in side-view in frontal perspective. This 'twisted perspective', which is unknown in the fully matured art of the Magdalenians, is found through all phases

of the Spanish Levantine art at Cogul, Alpera and elsewhere, ■ well as in the later rock-drawings of North Africa (as in the engraving of a male and female *bubalus antiquus* on a rock-face near Er Richa, Oran), and in the civilized art of Egypt; and since there are obvious affinities, in other respects and especially in the method of representing human beings in motion, between the palaeolithic art of Levantine Spain and the later art, not only of North Africa, but of Rhodesia and South Africa, it seems possible that the Dordogne was the original home of an artistic tradition that spread eventually over the whole vast continent of Africa, where it survived in some places almost until the present day. Not that we ■ to attribute the entire artistic output of this vast region wholly to the influence of the Dordogne artists. It is, for instance, the opinion of Breuil, the greatest authority on the subject, that immigrants from north of the Pyrenees, bringing with them an Aurignacian or Gravettian culture, found in the Spanish Levant a crude style of native art, and that the typical Levantine art, with its lively impressionistic style, resulted from ■ blend of this native tradition with the more advanced technique of the northern school. But it is indisputable that styles and techniques of art were transmitted from the Dordogne to Cantabria and the Pyrenees,⁸ and that the influence of the latter centres penetrated through the Iberian peninsula, which in turn had close cultural connection in post-glacial times with northern Africa; and if the influence of the classical Hellenic sculptors could penetrate, as it did, to the remotest corners of Asia, there is nothing fantastic in the supposition that the influence of the Franco-Cantabrian artists penetrated into Central and South Africa. Certainly they were, ■ far as we know, the earliest practitioners, ■ they were the greatest masters, of a style of parietal art, which is of almost world-wide occurrence among 'primitive' and uncivilized peoples.

Yet for all its long professional tradition and mature technique, what perhaps most impresses us, when we come to look at these cave paintings, is the extraordinary indifference of the artists to any aesthetic effect. Their finest work ■ often carried out in some remote and hardly accessible cavern, whose utter darkness was relieved only by the feeble light of ■ little stone lamp. And not only did they carry out their work where it is impossible that it could have been fully seen, and in many cases in some obscure cranny, or on some ledge ■ ceiling, where its full illumination is hardly possible even with our modern resources of lighting; but

they often drew and painted without any regard to the natural planes of vertical and horizontal direction, or to what previous paintings might already occupy the surface on which they were working. Thus the celebrated ceiling at Altamira bears a palimpsest of drawings and paintings, crowded and superimposed one upon the other without any plan or order, and which as single works of art necessarily lose a great deal of their meaning and appeal by this confusion. If the paintings themselves were mere crude scrawls, there would be less reason for surprise; but it is the combination of high artistic skill and elaboration in the execution of the paintings with the seeming indifference to aesthetic effect that is so contrary to our modern ideas of art.

This brings us to a consideration of the motives and inspiration of palaeolithic art. This topic has often been discussed in terms of the contrast between magical purpose and 'pure art'. But it seems to me that this is a false dichotomy, which ignores the obvious fact that until comparatively recent times art and religion have always been closely associated: if the palaeolithic artist did not practise 'art for art's sake', neither did Phidias or Giotto. Of the magical or religious intention of the cave paintings there is indeed abundant evidence; and it is probable that in some cases the work of the artist formed part of a magic ceremonial. Many of the animals have spear-point marks pointing to the region of the heart, while others are drawn wounded or dying, or headless or otherwise incomplete; and the tectiform and other conventional marks with which the paintings are sometimes associated were probably intended to represent and insure the huntsman's success in trapping his prey. Perhaps the clearest evidence is to be found in the famous *salle du sorcier* at Les Trois Frères in the Pyrenees, where in the remote depths of the cave a smooth-walled rock-chamber is decorated with a frieze of animals, presided over by a human figure in animal guise placed higher up on the end wall. Or there is the chamber at Tuc d'Audoubert in the same district where the clay bison were found, which is equally remote and inaccessible, and on the floor of which a number of round heel-marks indicated that it had been the scene of some kind of religious dance. We may suppose that at set seasons, before the huntsmen set forth on their expeditions, or at times of crisis, ceremonies were held in the depths of the caves, in which by the aid of the pictured animals the stages of a successful hunt were mimicked in dance and other magic rites; and it is possible that, as in the case of some modern savage peoples, there were 'secret

societies' whose ceremonies were held in these remote sanctuaries far from the contact and knowledge of the womenfolk, and rites for initiating the young males into the ranks of the hunters. It is significant that no female images of any kind have been found in the caves; and we may notice that at Laugerie Basse, Creswell Crags and elsewhere small bone pendants have been found which seem to be model bull-roarers, and which suggest that this 'voice of the god', of world-wide occurrence among uncivilized peoples as an instrument of male magic, was already known in palaeolithic times. Again, it is likely, though positive evidence is lacking, that the carvings on the spear-throwers and other tools and weapons were felt by the artist, or owner, to give them a magical, or more than ordinary efficacy.

But when all this has been said ■ the magical associations of palaeolithic art, let it not be supposed that that art has been thereby 'explained'. Let us not suppose that palaeolithic man first conceived the idea that, if he made a picture of an animal, he would acquire magical control over it, and then proceeded to make ■ picture of it in order to achieve this preconceived practical end; for nothing could be farther from the truth. Primitive mind, and indeed human mind in general, does not work in such a way. In creating the form of an animal the hunter doubtless felt that he was in some way creating the 'spirit' of an animal. But the magical idea grew out of the activity, as the myth grew out of the rite, and not *vice versa*. The fundamental truth of the matter I take to be expressed in the words of Jane Harrison: "At the bottom of art, as its motive power and its mainspring, lies, not the wish to copy Nature or even improve on her—but rather an impulse shared by art with ritual, the desire, that is, to utter, to give out a strongly felt emotion or desire by representing, by making or doing or enriching the object or act desired. . . . 'This common emotional factor it is that makes art and ritual in their beginnings well-nigh indistinguishable.'" The relation between ritual ceremonies, religious emotion and magical beliefs will be further discussed in the next chapter: we may conclude in the meanwhile that ritual and artistic activity, and the emotional state accompanying it, is primitive and original, and that magical practices and beliefs are secondary and derivative.

Religious emotion, in the widest possible sense of the term, is one root of palaeolithic art: the other is the craftsman's pleasure in the exercise of his technical skill. For tens of thousands of years men had been practising the craft of flint-knapping, and during

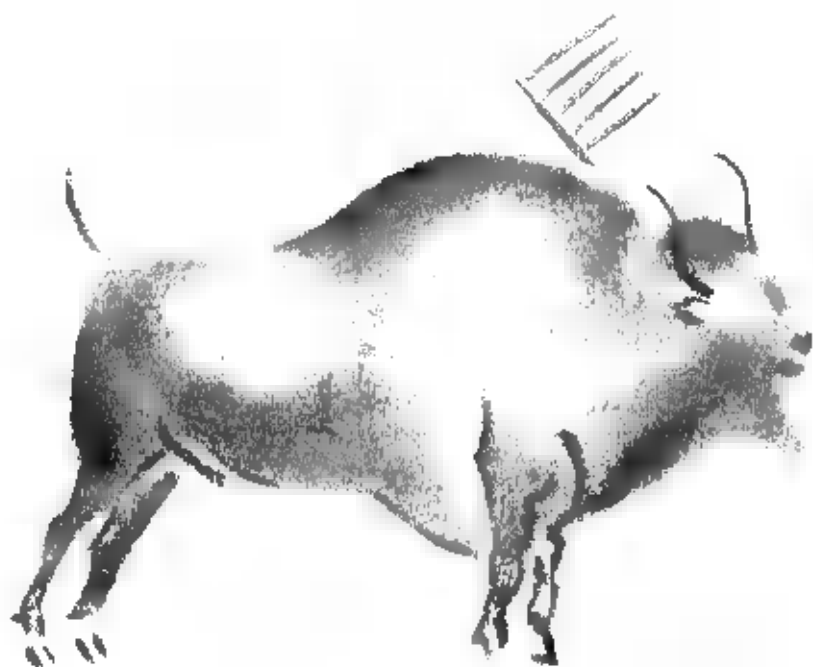


PLATE II Bison in chiaroscuro from the Altamira cave

(After Braul)



this age-long apprenticeship had acquired an extraordinary degree of skill in the co-ordination of hand and eye. Even in the Acheulian age we have evidence that the tool-maker was 'wasting his time' over achieving a useless perfection of form; and anyone who has ever whittled a stick or even sharpened a pencil knows how this feeling for shape and symmetry is implicit in even the simplest kind of manual activity, as the feeling for rhythm is in movement and the production of sounds. It is this loving care and skill of the handicraftsman that the Franco-Cantabrian artist displays on the walls of his caves, and perhaps still more evidently in the beautiful and elaborate carving of his tools and weapons. He drew and carved and painted these animal shapes equally as craftsman and magician; and the craftsman's delight in his work is only theoretically distinguishable from the religious impulse informing it.

There has been a close connection between art and religion in every age except our own. Yet we must also recognize that a strongly entrenched hieratic tradition, whether of priests or magicians, as also a strongly developed magical or 'practical' attitude, tends to destroy the vitality of art, and reduce it to conventional forms. The generally crude and conventional art of the eastern 'Gravettians', as represented by the diagrammatic drawing of a woman from Předmost, and objects from the palaeolithic sites in the Ukraine and Siberia, we may explain, and dismiss, as magical. But how came it that the art of the West grew and flourished and displayed such an astonishing vitality over such an enormously long stretch of time? That is the outstanding problem, which we can provide no satisfactory answer for, lacking the necessary facts on which to form a judgment. Were the magicians or religious leaders themselves artists, or recruited from the ranks of the artists; or did the religious and artistic heritages flow down through two separate channels of tradition? We do not know; and can only postulate some peculiar 'historical' conjunction of persons and events as the *causa causans* of this Franco-Cantabrian art, as of the Hellenic art of the fifth century B.C., or of the modern French school of painting—both of which may even be ultimately derived from it. But what is surely without parallel is the millennial vitality of the palaeolithic school¹⁰; and I think we may conclude without paradox or exaggeration that these late palaeolithic communities of the West were more artistic than any civilized people has shown itself to be, and their art merits our attention, not only as the most remarkable memorial we have of

prehistoric humanity, but ■ one of the chief monuments for all time of the human spirit.

NOTES

¹ Another suggestion is that they were used as large-scale 'brooches', thongs attached to the wearer's skin cloak or coat being passed through the holes, the garment being thus adjusted to be worn either closed or open in front. Cf. G. Goury, *op. cit.*, pp. 357-358.

² There is, however, another explanation of the absence of soot from the walls of the caves: that the organic carbon deposited by smoke from burning fat is very slowly oxidized, and so in course of time disappears.

³ The recent discovery at Angles-sur-Anglin of a carved and painted representation of a human face may give some further indication of what the Magdalenian hunter may have looked like. As judged by this contemporary picture he was a swarthy individual with low, flat head, brutally projecting jaws, wide, flat nose and black straight hair and beard, and he wore a thick coat ■ cape of animal fur. I do not myself think, however, that much reliance is ■ be placed on this picture, interesting ■ it is. The general shape of the head has little or no resemblance to that of the Chancelade or other skulls of the period, and it seems unlikely ■ physiological grounds that a people living under cold steppe conditions should have had the wide nostrils suitable to the inhabitants of quite a different type of climate. It is possible of ■■■■ (but unlikely) that these inhabitants of Angles-sur-Anglin were recent immigrants from the South: it is also possible, and even likely, that the shape of this 'portrait-head' was determined more by the original shape of the stone on which it was carved and painted than by the physiognomy of the artist and his friends and fellows. In fine I do not think we ought to conclude much more from it than that these particular Magdalenians had black hair and beards.

⁴ Some photographs of the finds at the rock-shelter at Angles-sur-Anglin, including the 'portrait' referred to in the previous note, were published in *The Illustrated London News* for 16th July, 1949.

⁵ Vol. V (1939), pp. 51-60.

⁶ W. H. Riddell, *Dead ■ Alive?* in *Antiquity*, Vol. XIV (1940), pp. 154-162.

⁷ Cf. K. Koffka, *The Growth of the Mind* (1924), pp. 245 *et seq.* The eidetic image is discussed further in the next chapter.

⁸ Cf. W. H. Riddell, *Palaeolithic Paintings—Magdalenian Period* in *Antiquity*, Vol. XVI (1942), p. 26.

⁹ *Ancient Art and Ritual* (1913), p. 26.

¹⁰ Perhaps in our view of palaeolithic art we suffer ■ to speak from the distorting haze of distance, and what appears to us as a single

artistic tradition stretching through thousands of years was rather a number of separate 'ages of art' each lasting ■ comparatively short time and with long intervals of time between them, such as the great ages of artistic production in historic times have had. Yet even if that be so, and if the time-scale be reduced to its minimum possible duration, the renewed, if not continuous, vitality of what is essentially a single artistic movement or inspiration over at least several thousand years is none the less a subject for astonishment; so that my sentence in the text still stands.

CHAPTER VIII

PRIMITIVE MIND

IT MAY BE objected to the title of this chapter that, in view of the paucity and uncertainty of the available evidence, any elaborate discussion of the mind of palaeolithic man is a waste of time. The short answer to that objection is that we must form some positive conception of primitive man and his mode of life if we are to interpret, or even describe, the material remains he has left behind; and we can do that only by conceiving him in mental terms — a person and agent; so that — 'refusal to speculate' amounts to — more than — refusal to examine the implications of our own *parti pris*. But we do need to begin by clarifying the terms of such a discussion. We have indeed a vast — of information, of varying degrees of reliability, about the customs and beliefs of modern uncivilized peoples, and, in the second place, an exiguous but important body of evidence about the comparable beliefs and customs of palaeolithic humanity. But how is this material to be dealt with? It is — main postulate of the historical point of view that all human institutions must have had a personal and particular origin; and in the field of modern folk-lore it may be possible in some cases to trace back existing institutions and beliefs to — historical source, or to reconstruct conjecturally the development of a culture-complex over a wide area of time and place. But it is of the very nature of the prehistorical (which includes all human activity, of whatever date, that lies outside the context of written records) that such forms of explanation are only possible on a very limited scale; and if we wish to penetrate further into the vast abyss of unrecorded action, we can do so only in terms of an abstract scientific, or evolutionary, survey; and the generality and simplicity of such an explanation is the measure of its abstractness and inadequacy to cover the boundless variety and particularity of the actual and irrecoverable past.

A further difficulty is that even the earliest palaeolithic customs we are aware of, and still more those of modern uncivilized

peoples, are not, in the strict sense, primitive; and though the correspondences that can be traced between the two give us an insight into the mind of palaeolithic man, and strikingly illustrate the conservatism of social forms and customs, they cannot be relied on when it comes to the question of psychological origins. For instance, the strong element of fear in the religious rites and beliefs of modern barbarians and savages is a fact of common observation, and seems to lend support to the old view of the philosophers that religion originated in fear. But we have no right to assume, as is frequently done, that this fear of ever-threatening evil spirits, which is of such world-wide occurrence, is a 'natural' result of primitive man's economic helplessness and the physical hazards of his existence, since it is everywhere an integral part of a particular social tradition, and is obviously in some cases deliberately fostered by a particular class or section of the community to secure its own authority and privileges. It is indeed questionable whether the natural hazards of life are ■ much greater in societies ridden by nightmare terrors of Ju-ju and Obeah than among other societies, such as the Hellenic community of the Homeric Age, which have been relatively free from superstitious fears. In fine the psychological is inseparable from the social situation and tradition; and therefore when we try to penetrate to ■ pre-cultural psychological state of 'natural man', we have to make a still further effort of abstraction. Yet this vanishing point of our knowledge is also the fountain-head of all history and humanity; and there the several disciplines of archaeology, anthropology and psychology meet together. For the psychologist as for the prehistoric archaeologist the concept of primitive mind is a fundamental necessity. Even though our knowledge is so tenuous and uncertain, it is none the less necessary that the concept should be formulated, if only in order that we may correct our previous assumptions and prejudices.

Our first need, it seems to me, is to correct the intellectualist bias implicit in the ordinary forms of thought and language, and which assumes that the rites and beliefs of primitive man are to be explained in terms of intellectual error and mistaken processes of thought. An outstanding example of this bias is provided by Frazer's well-known theory of magic, as a system of 'natural law' based ■ two 'principles of thought', which gave way to religion because "the shrewder intelligences must in time have come to perceive that magical ceremonies did not really effect the results which they were designed to produce."¹ This explanation, apart

from other objections to it, takes a wholly mistaken view of the workings of the human mind, and of primitive mind most of all. A similar kind of intellectual bias is to be found in such statements as that of Professor Macalister in relation to primitive art, that "there is nothing purposeless in the acts of a savage. His most seemingly irrational acts are all directed towards a definite end."¹ Even ■ applied to the most highly civilized and self-conscious individual this assertion would be a very questionable piece of psychology, since it implies that all his acts have a rational origin and basis, whereas rationality is rather the façade or front elevation of personality, which may conceal behind its formal regularity all sorts of dark passages and queerly shaped rooms. Indeed the opposite theory of Lévy-Bruhl that primitive man possessed ■ mystical or pre-logical mentality, different in kind from ours, represents, it seems to me, the reverse face of the same intellectualist fallacy; since it assumes that all ■ acts have a rational basis, and that behaviour and motives which differ so fundamentally from ours as the behaviour and motives of savages are found to do, must be entirely irrational. But, in spite of the gulf between their world and ours, savages have been shown to display in everyday life the same sort of thinking as ourselves. Their motives are different from ■ because the world in which they live is different; and if it is ■ much less logical or scientific world, it is ■ less real to them than ours ■ to us; and the difference of logicity is not an absolute one, nor the only one.

I believe that the roots of the intellectualist fallacy go further down, into our concept of reality itself, as something existing absolutely outside our experience, and which is revealed to us by scientific method; whereas the truth is that, while the category of reality is constituted by the nature of our experience in time-space, its content is always traditional and historical, and as much to-day as it has ever been in the past. We live in a world built up by Democritus and Newton and Lavoisier and Einstein and a thousand other scientific investigators and theorists; but not only is this real world of each age and generation relative to the knowledge and outlook of those who live in it, but it is also one built up by Plato and Paul of Tarsus, Augustus and Luther and Spinoza and Napoleon, and all the other political and religious leaders and philosophers of the past; and this historical world of our social and religious and political traditions and beliefs is not something 'merely subjective' in contrast with the scientific world of 'objective reality', but rather the world of our scientific tradition

forms part, and part only, of our historical world which is made up of every kind of tradition, social, scientific and religious, and which is being continually modified and enlarged by the activity of each successive generation.

The opposite 'scientific' or 'realistic' view is bound up, again, with an erroneous theory of perception, which had its classical expression in Locke's 'way of ideas', but is much older and more deeply enracinated in our way of thought. Its logical absurdity has been demonstrated *ad nauseam* since Locke's day; but it still haunts our minds, conditioned by so many ages of personalizing the impersonal and abstract, and is to be found raising its head in such an up-to-date book as C. K. Ogden's *The A.B.C. of Psychology*, where we are informed that the growth of knowledge proceeds from particular appearances of sense-impressions to the 'real' object, and from particular objects to classes and general ideas or concepts.² Perception, I suggest, has three fundamental characteristics: firstly, it is an active response to a situation, which is itself partly created by the need or activity of the percipient, as the situation, for example, of the suckling infant is partly created by its own hunger; secondly, the situation ■ first grasped as a whole in its practical bearing, before it is distinguished into objects and qualities, or particular and general: in other words, reality, or objectivity, the sense of which develops *pari passu* with the muscular sense of bodily integrity, is logically prior to appearance, and the recognition of kinds and particulars contemporaneous; thirdly, the situation throughout is a social one, so that the world in which the individual grows up is not a physical world of objects as such, but a human world of people and things related to each other and to the percipient according to certain traditional modes of feeling and behaviour. I believe that a satisfactory approach to the problem of primitive mind can only be made on the basis of such an 'historical' definition of perception and reality.

The main step in the development of the human from the sub-human may be defined objectively as the transition from nature to culture, subjectively as the transition from sub-conscious or instinctive to conscious behaviour. If an instinct be defined as a pattern of behaviour which arises independently of the individual's experience and leads to a biologically useful result, e.g. the nest-building instinct of birds, then the term cannot be properly applied to human behaviour at all, the so-called human 'instincts' being essentially types of feeling rather than patterns of

behaviour.⁴ But there is no absolute boundary between instinctive behaviour which is 'purely innate' and that into which some degree of individual learning enters. Rather there is an inclined plane of behaviour from that which we call instinctive or automatic, because we can only explain it in objective terms, to that which is fully conscious and intelligent; and this gradual evolution is represented in the physiological context by the development of the central nervous system and expansion of the cerebral cortex. Midway between the two extremes is the kind of learning by experience of which the higher mammals are capable, and which in the ■■■ of apes involves, as Köhler's experiments have shown, a fitting of means to ends which closely approximates to the conscious operations of the human mind. Behaviour of this kind we may call intuitive, without necessarily accepting all the implications of Jung's use of the term; and the evidence from the Choukoutien caves points to the conclusion that the main advances to fully human existence, the establishment of ■ social tradition, the conquest of fire and making of tools, and even a rudimentary form of speech, preceded the development of the higher levels of consciousness: in other words, behaviour was fully human before the development of conscious mind. We are inclined perhaps ■ visualize primitive man as waking, like Adam, to his first conscious vision of the world out of a previous state of sleep or mere non-experience. Rather we should think of him as functioning through countless generations at an intuitive level, and of new levels of conscious and discursive thought being slowly, and ■ a late stage, added to an organization functioning with age-long efficiency at a lower level.

Psycho-analytic theory has tended to stress the pathological aspect of the intuitive or sub-conscious (to use ■ dubious but hardly avoidable term) levels of mind. Something will be said of Freud's fantastic mythology of mind in the next chapter: here it is enough to put forward the obvious suggestion that human communities could hardly have persisted through all the revolutions of the Glacial Age if their life had been diseased at the root, as Freud supposes it to have been. There is a further point here. It is common form to dwell on the risks and uncertainties of savage life, the flickering firelight and unexplored darkness of the cave and the surrounding night, the gorges of food intermitted with long periods of fasting, and to attribute the quirks of savage behaviour to these unfavourable conditions. But are we not judging the dangers and insecurities of such a life by a civilized

standard which is wholly inappropriate? It is true that the expectation of life in palaeolithic times was much lower than it became later. But what is expected is taken for granted; and the circumstances of human life at any time are limitative, not creative. The positive qualities of primitive, as of any other kind of mind, are not to be explained, I suggest, by any natural circumstances: rather they are the explanation of everything else.

One of the main characteristics of intuition is its psychological directness and immediacy; and with this we may perhaps associate an acute suggestibility and sensibility to impressions, emotional instability, and an easy passage from dream to waking experience. Probably the primitive, like the modern savage, was very liable to a state of trance, or 'possession' which we regard as typically pathological, but in his case had a quite different social and psychological complexion. For among modern uncivilized peoples it is often found that persons subject to these trances are the most active and forceful members of the community, and they enjoy on account of their gift the highest social prestige. Indeed I do not think we can avoid the conclusion that the powers claimed by such individuals are not wholly illusory, and that the lack of the higher intellectual levels of consciousness is compensated by a clairvoyant or intuitive faculty which civilized man has almost lost, but of which the powers of the dowser, and of the spiritualist medium if they are anything beyond the tricks of the charlatan, may be a pale survival. Such powers are inexplicable, not because they are 'supernatural' but because they are pre-logical. Nor should we attribute to them any superior degree of certainty or reliability: rather they would vary in efficiency as the power of discursive thought does. Intuition may have enabled the hunter to shape his tools with the skill of the 'born artist', and to track his prey with thoughtless certainty. In other cases it is likely to have been a highly irregular, 'hit-or-miss' sort of faculty, and bound up with a great deal of unconscious make-belief. But to suppose that the primitive shaman was merely a clever charlatan, practising his tricks in the manner of a modern conjuror, is probably as far from the truth as to suppose that he was supernaturally inspired.

In a rather arrogant way we have named our species *Homo Sapiens*. But indeed wisdom is no more generically human than folly is; and the term lays an undue stress on the intellectual aspect of mind. I suggest that a more accurately descriptive title would be *Homo Fingers*, Man the Fashioner, the tool-maker and builder

and fire-maker and image-maker, the artist and poet ('poet' being only the Greek form of 'maker' or 'makar', as in the mediaeval 'Lament for the Makaris' of Dunbar), the myth-maker and story-teller, the word-builder and world-builder. Man erected his world in becoming conscious of himself as a member of a human group at the axis of it. In fully conscious behaviour thinking, feeling and acting are distinct; but intuition embraces all three; and the real world of primitive man's perceptual experience was one and the same as his world of willing and feeling and imagining. Among the elements of intuitive mind we may include, besides intelligent activity at a sub-conscious level, the basic urges and emotions of hunger and sex, fear and anger, love and hate, joy and sorrow, pride and abasement, curiosity and possessiveness; secondly, a much closer integration of individual thought and feeling with the life and thought of the group than is the case with fully civilized societies; and thirdly, a capacity for play, for doing and making for its own sake, and a tendency to rhythmic patterns of behaviour in excitement. As all these different functions and modes of subjectivity were flowed into one another, so every form of activity tended to be at once practical and religious, purposeful and playful or artistic, social and individual, intelligent and emotional, perceptive and imaginative. The forms of language, religion and society, of reality itself, were all laid down during this undifferentiated stage of mind, which separated out into distinct modes and faculties only with the later growth of consciousness; and the separation, even then, was not complete, and never was.

Some light is thrown on the functioning of intuition by two characteristics of childish mind which we may regard as 'primitive'. One is its 'eidetic' capacity, that is, the power voluntarily to reproduce sensory impressions for some time after they occur with full sensory clearness; and the other is its tendency to imagine and recognize forms and patterns independently of their spatial relations, as, for instance, the ability to recognize a picture as easily upside down as in the normal position, and to read mirror-writing as easily as ordinary writing; and so too young children will often at first write their letters backwards or upside down. These characteristics illustrate the dominance of the imaginative or sensory-emotive over the conceptual or intellectual elements in primitive consciousness, and the priority of what might be called the 'block perception' over the distinction of parts and qualities; and they help to explain the character of palaeolithic art. We

might in fine summarize the difference between primitive and fully civilized man by saying that the former depended on 'genius', while the latter depends more on intellect.

The development of conscious thought, and of the system of external reality which is bound up with it, synchronized with the development of language; so much so that we can hardly conceive the one without the other. But if we define speech as the use of conventional sounds, the meaning of which has to be learned by each new generation, its origin must go back into the pre-human past. Recent studies have shown that the chimpanzee uses at least nine different sound-series, each with a special significance; and we can hardly doubt that the pliocene ancestors of man must have used an equal or more extensive range of sound-signals. In other words the great transition from nature to culture is to be thought of, not as a sudden break, but as ■ evolution so gradual that it would be impossible to decide at what particular point it was made, if we had before ■ for study a continuous evolutionary series. As it is, mankind emerges at the beginning of the Pleistocene as a biologically distinct genus or family, a tool-maker, and we may suppose with an endowment of speech which already set him apart from all other animals.

The cries and gestures of animals are, ■ to speak, embedded in the situation which gives rise to them, their function being to stimulate in other members of the group within range an immediate activity appropriate to it. Human speech also originated as an expression of social life; and ■ what I have called the 'block perception' preceded the recognition of objects and qualities, so the earliest speech took the form of discrete word-sentences each related to a whole situation, and which were at once informative, expressive (or emotional), and conative or imperative—e.g., the cry of attack was at once the expression of pent-up excitement, a statement of one's intention to attack, and ■ summons for others to follow. Its development coincided with the growth of social life and co-operation for social ends, as in the two fundamental activities of hunting and tool-making, in both of which the young generation would require to be trained; and at the same time it was related to the development of speech-centres in the cortex, and the anatomical modification of the jaws and palate to allow articulate utterance. According to Sir Richard Paget it involved the combination of cries and grunts

and other purely expressive sounds with imitative and explanatory gesturing and grimacing with lips and tongue; and he suggests that the continual use of his hands in making tools and using tools drove primitive man to concentrate his gesture language in the tongue and lips—though it may be doubted whether such a stage of continual manual occupation could have been reached without the prior acquisition of the faculty of speech.¹ Its development would in any case have taken the form, partly of an increasingly complex system of vocal signals, partly of an increasing independence of such sound-signals from the immediate situation. As the time gap grew between the expression of the intention and the act intended, the cry of triumph and the act of triumph celebrated, so speech became an independent activity, and by expanding the consciousness of time, as it were created the past and the future. The details of the hunt could be rehearsed in a preparatory dance, and re-lived again afterwards in memory. The future could be in some sort planned, and past experience incorporated and brought to life in an oral tradition. In this development the human faculty for play and imitation must have played a leading part. It is by imitation that language is transmitted from one generation to another, and in the child's playful use of sounds and repetition we may see the model of primitive man's manner of originally creating new patterns of significant sound.²

As the child's mental development proceeds by stages rather than by a uniform progression, so probably in the development of thought and language long periods of unprogressive tradition were interrupted by surges of advance, occurring here and there within a comparatively few generations; and these must have been related to the latest evolutionary stages of man's skeletal and nervous development. If the dissociation of sound-gestures from the immediate practical situation was one main step of advance, another and later one, to be associated perhaps with the emergence of *Homo Sapiens*, was the breaking down of word-sentences into separate and transferable terms, or, to put it the other way, the building up of sentences out of separable terms or words. How this change took place it is probably idle to speculate; but we may dwell a little on the importance of its consequences. Obviously it would have led to a enormous increase in the range of co-operative action, and of its effectiveness. More than that, we might say that, by creating proper names, class names and predicates, it gave subject and object separate identity, and so

created at once the world of conscious mind and of objective reality. Both memory and conceptual thought, and even imagination and dreams, are dependent on naming and predication. As a noun is 'the name of something', ■ every invention of a new noun or name was the creation of a new entity; and as the world of experience was primarily a world of social and personal relations, so the 'objective order' created by language was a projection of the customary modes of feeling and action, and of the social system: in fine it was suffused with subjectivity. So it was in the beginning, and so it still to some extent is.

Of the earliest forms of language we have of course no knowledge; but there are certain characteristics of modern savage or uncivilized speech which we may regard as probably those also of the speech of late palaeolithic times. One is that it expresses not merely the fact, but the social relations of the speaker to it, and to the person addressed; another, that it starts as it were with the particular situation as a whole, rather than with the general forms or concepts which, according to our civilized mode of thought and speech, compose it. We find, for instance, that different words and forms of expression are used according as the speaker is male ■ female, is speaking to a superior or ■ inferior, to ■ relative or a stranger; that while there may be separate terms to express the relation of the speaker to his own father, or to the father of the person addressed, or to someone else's father, there is no term for 'father' ■ a general relation; that if a boat or water is spoken of, it will be named always in relation to some particular use and occasion, and all these complicated verbal expressions may have ■ root or element in common. Thus the richness and variety of savage utterance, the complexity of its syntax and conventions, are accompanied by ■ extreme poverty of conceptual forms and distinctions. The meaning it conveys is both unprecise, and charged always with social and personal and mystical undertones. Again, the lack of ■ neuter gender, and the complicated and indirect ways of distinguishing number and gender, express the anthropomorphic and 'sympathetic' character of the savage world, and the closeness and complication of the social ties uniting the individuals of the family or tribe. And in addition to all this there is the sacred character of all primitive speech, which makes the use of certain words by certain people on certain occasions sinful or dangerous, and associates knowledge of a name with magic influences over the thing named. Thus it is common among uncivilized peoples for a person's 'real name'

to be kept hidden from all but a privileged few, and for words to become taboo simply on account of their verbal resemblance to the name of someone who has lately died. This primitive attitude to language is perhaps reflected in the schoolboy's fondness for 'secret languages', and dislike of revealing his personal name, as it is also in the spells and incantations of all ages, which assume the existence of 'words of power', which can produce magical effects.

All these characteristics civilized language has largely, but not entirely, grown out of. Male and female gender is still attributed to non-living objects, and personality, in thought as in forms of speech, to abstractions. Languages still express the historical 'genius' of the peoples who use them; and poetry, in so far as it survives, still depends on the magic and sympathetic power of words. Like mind itself, civilized language has put on a logical façade; but there is enough of the old picturesque framework left to let us recognize its fundamental similarity to less classical structures. The primitive foundations are still there.

The creative imagination of primitive man expressed itself equally in craftsmanship and art, in language, and in the invention of magical and religious rites. The rite, the earliest form of which was probably some kind of dance, may be defined as a formal and traditional mode of behaviour, carried out on solemn occasions, and suffused with a characteristic kind of excitement; among its constitutive elements we must include the playfulness, and tendency to rhythmic patterns of behaviour in excitement, which are already found among the anthropoids. But while art developed through a concentration on the formal pattern of speech or movement as an activity for its own sake, the rite was essentially a social act, and the excitement associated with it, though in origin hardly distinguishable from aesthetic feeling on the one hand and sexual excitement on the other, became and remained 'religious' through being bound up with the 'public feeling' of the group. In other words the primitive rite was an 'act of communion', in which the individual surrendered himself to, and participated in, the 'sacred' excitement of the group or congregation. The conception that some psychologists have put forward of a 'group-consciousness', functioning in some unexplained way, seems to me arbitrary and illogical. But what McDougall calls the 'instinct of gregariousness', that is, the tendency to surges of group feeling and excitement, is undoubtedly one of the funda-

mental characteristics of humanity; and it was the surrender to this mystical 'call of the blood', expressing itself in the dance, which probably constituted the original 'act of religion', and provided the original bond of union for the social group. Crowd emotion is by no means uncommon among civilized peoples, and the epidemics of mass hysteria in the Middle Ages probably exceeded in extravagance anything that happened in prehistoric times. Such outbreaks may be regarded as a pathological recurrence of a primitive state of consciousness, which was in its original expression normal and healthy. However that may be, I think that in trying to unearth the origins of the religious sentiment we should at least take as much account of these periodic outbursts of group excitement as of any individual 'sense of awe' in the face of external nature and the natural hazards of life. It was towards the human group of which he was a member rather than towards any external 'powers of nature' that the religious feelings of the individual were most probably at first directed.

There have been many definitions of religion, and of the relation between religion and magic, most of them in terms of belief, or a theoretic basis of action¹; but if we trace the origin of both religion and magic to ritual behaviour, and assume that the rite long preceded the formulation of any theory or belief, then many of the distinctions that are drawn between religion and magic fall down. In developed societies rites of prayer and sacrifice may provide a contrast with attempts to produce a desired end by compulsive supernatural means; and there is the contrast also between religious rites which are public and official, and directed to the public good, and magical rites which are generally secret and unlicensed, and — directed towards some private end. But such contrasts are plainly inapplicable to the condition of primitive mankind; for we must assume that the earliest rites were all public and communal, and long preceded any idea of supernatural powers, whether to be placated or compelled. If we — to draw a distinction between the two terms in this context, it must be in terms rather of the type of situation and the individual's reaction to it. The dance inaugurating a hunting expedition, for instance, would express the determination of the hunters to secure their prey, and would be typically magical: on other occasions, such as a death, the rite would express the passive reactions of the feelings towards an emotional catastrophe, and would be typically religious. Or again, we might describe the primitive act of religion as essentially a surrender of the will, associated

with feelings of awe and impotence and abasement on the one hand, and of ecstatic joy and power in the 'mystical union' and lapse of conscious control on the other; while the act of magic is essentially an assertion of the will, the desire for control and mastery leading to mimic rehearsal of the act desired, and that in turn to belief in its ritual efficacy, the strength of the desire providing its own guarantee of fulfilment. But since feeling and activity are ever closely combined, so the volitional ■ magical and the religious or emotional responses are generally combined as parallel or successive phases of a single pattern of behaviour. Nor does magic infringe on the sphere of practical means and devices, since it is associated with those aspects and occasions of life where ■ practical action is feasible, with the chances of the weather and the chase, the stages of human growth and decay, and with disease and death; and it provides the relief of tension which such a situation requires. When we 'let off steam' in moments of frustration, is not our behaviour a kind of 'vestigial' magic?

Marett's theory of a pre-animistic stage of primitive religion has been severely criticized by Professor Raaflaub Karsten on the grounds, among others, that impersonal power implies a more advanced stage of thought than animism, rather than a more primitive.¹⁶ But a major objection to both 'animism' and 'animatism' is that they are both theoretic explanations; and religious and magical rites did not have to wait on animistic or animatistic theories for their development.¹⁶ Nor were objects first perceived as such, and then endowed with personality, or supernatural powers. Rather we should say that for primitive man the human group to which he belonged ■ his universe, which included in it all 'nature', the dead ■ well as the living, and not only humans but the animals whose life and death was so closely bound up with his own; and there was for him ■ distinction of human and non-human, alive and dead, or still less, of natural and supernatural. Man, coming to consciousness of his own soul, at the same time filled with soul the world of his experience, filled it with his own fears and angers, powers and desires and purposes. The strength and forcefulness and violence, which were in himself a source of pride and power, were elsewhere ■ source of danger, awe and avoidance; and so we have the two complementary attitudes of religion and magic, which may be taken to correspond with the two commonly used complementary terms, taboo and *mana*, one adapted from the Melanesian language

and signifying 'ritually prohibited', and the other from the Polynesian and signifying 'power' or 'luck' of a more or less supernatural kind. Both terms are projections of human willing and feeling, of desires and fears made awful and almighty by primitive inability to recognize the bounds of the possible. But we must also bear in mind that all particular systems of magic and religion expressed the social history of the particular community in which they developed, that what Professor Radcliffe-Brown calls 'ritual values' were in all cases invented and developed by individuals or social classes within the group, as an expression of his or their authority.¹¹ Nor have we any right to assume that every pattern of social behaviour thus established tended necessarily to the survival of the group, any more than we have a right to assume that all the acts of historical groups and individuals have been for the ultimate good of the people concerned, or of mankind in general. The 'functional view', which assumes that "in every type of civilization, every custom, material object, idea and belief fulfils some vital function"¹² ('vital' here presumably meaning 'necessary for the survival of the group'), whatever its value as a working hypothesis, ■■■■ to me open to the same objections as is the theological 'argument from design' as a principle of historical explanation. Outside as inside the sphere of recorded history the particular facts are ultimate. We may grope towards an understanding of what did happen by arguing from what 'may' or 'must' have happened; but then to explain what did happen in terms of some general law or teleological principle is mere argument in a circle. As Koffka well points out, the religious attitude of the primitive man is no less 'natural' than the irreligious attitude of the modern civilized man: what rather requires explanation (and is to some extent open to explanation) is how one attitude changed into the other.¹³

Religion, like art, was not so much a department of primitive life and mind ■ the atmosphere in which it was bathed at every point. Any context or situation in which the feelings of the individual were strongly aroused, or outbursts of group excitement were liable to occur, was inevitably religious. The natural crises of birth and adolescence and mating and death, the annual revolutions of the seasons on which depended the economic life of the group, the migrations in search of food and opening and closing of the hunting season, the yearly death and re-birth of vegetation and harvests of the land and sea—all these were from the first, and always have been since, religious occasions. Let us

briefly consider some features of this religious growth, under the three headings of death, hunting and sex.

The primitive inability to conceive the physical nature of death has been noticed in a previous chapter; and the long survival of the feeling that death was 'unnatural' is evidenced by the world-wide prevalence of myths, similar in type to the story of the Fall in the Book of Genesis, which explain how death was first introduced into a world which previously knew it not. The development of this primitive attitude into ideas of survival and disembodied soul accompanied the growth of language and consciousness, with the hauntings of dreams and trances which it entailed. That whatever could be thought of, or dreamed of, and had a name, must in some sense be, was not indeed asserted as a philosophical proposition, but was assumed and 'felt' as part of the developing linguistic consciousness. So the breath, the blood, and the corpse itself were all endowed with some sort of life; and the soul was thought of as dwelling in the body, and wandering abroad from it, both during life and after death, as a man may leave his house and go on a journey. These ideas infected, and were in turn infected by, the ritual and traditional forms of disposing of the corpse which came to be gradually established during the earliest ages of humanity. Among the bewildering variety of modern uncivilized burial rites we may recognize two contrasted motives of behaviour, of sympathy and desideration on the one hand, and of fear and disgust on the other; the one expressing itself in mourning, and adornment and preservation of the corpse, burying it in red ochre to take the place and perform the office of the blood which has been drained away, placing a shell inside the mouth as a substitute for breath, decorating it with magic ornaments; the other directed towards its destruction, removal or disablement, putting it away under ground with stones piled over it, trussing it up to prevent its escape, disjointing or decapitating it or fastening it down with a stake, or casting it away somewhere, to be rid of the danger of it. Both these types of treatment date from the palaeolithic age; and apparently as old and as widespread is the seemingly very different custom of cannibalism. In some modern cases cannibalism is associated with warfare and the killing of enemies, and there is evidence of head-hunting in late palaeolithic times, if not earlier. But it is most unlikely that that was its original form; nor indeed is there any reason for supposing that it had only one original form. Certainly we are not to take its early prevalence as indicating

that the primitive savage, under the 'brutal' conditions of his existence, was entirely callous, slaughtering and eating his human and animal enemies heedlessly and without conscience. Nor is the relation between cannibalism and burial rites to be thought of necessarily in terms of 'stages of culture', but rather in terms of different cultural traditions growing up at different times and places.

The custom of cannibalism leads us to the topic of primitive man's attitude to the animals he hunted. It might be said that for him all meat-eating was a form of cannibalism, since he regarded the animals as possessing, like himself, not only life but feeling and intelligence and soul. Indeed their *mana* was more than human, inasmuch as they were greater in bulk and strength, more deadly and terrible. And so, when the prey was killed, the triumph was mingled with a sense of sacrilege. The *mana* of the dead beast would enter into the hunter as he consumed its carcase. But it was an 'eating of the god', a source of possible danger as well as of strength, a sacrament hedged with precautionary rites and prohibitions. So also for the hunt itself magical and practical measures had to be combined. Perhaps of all magical ceremonies the dance of the hunters in preparation for the hunt was the earliest, being the 'natural' expression of their excitement and determination; and their disguisement with the skins and horns and tail of the animals they intended to destroy was equally a practical and magical preparation, which enabled them to come close to them both in space and in feeling. The extent to which the life and forms of the animals they hunted filled the imaginations of the hunters is evident from the art of the caves; and nothing could illustrate more forcibly the almost incredible antiquity of our cultural tradition than the 'wizard's chamber' in the Cave of *Les Trois Frères*, alluded to in the last chapter. Here in this 'god of the witches' is the prototype of all the wizards, horned goats, and maskers in animal disguise, who throng through every age and country, from the earliest days of Ur and Egypt to those of Herne the Hunter and the mediaeval Devil with horns and cloven hoof and tail. And to this same source may be traced all the folklore legends of werewolves, and metamorphoses of ■■■ into animals and animals into men. The universal belief in such occurrences depended not merely on the logical indistinctness of primitive thought but on the actual closeness of the early human to the sub-human animal in feeling and experience, a sympathy which allowed him to feel that the

wolf or bear might be his friend or enemy, or he himself might be a wolf or bear in human guise, and which led on occasion to his actually turning himself into a werewolf ■ were-lion, becoming possessed and taking on the character and habits of a wild animal. This closeness of the hunters to the animal world in which they lived in daily, hazardous contact, was the pre-condition both of palaeolithic art and of totemic customs and beliefs, the roots of which, though totemism as a developed system was probably post-glacial, go deep down into the experience and mentality of primitive man.

Relations between the sexes have always been suffused with what the psychologists call an 'ambivalent' feeling of mingled attraction and repulsion, desire and fear; and here, more than in any other context of life, the most powerful emotions are most powerfully aroused. In human experience, as distinct from animal instinct, the fear seems ■ be as deeply rooted as the desire, the awe and fear, that is, of the imaginative male for the strangeness of the female, and for the character and effects of his relations with her, and the corresponding fear and modesty of the female shrinking from the violence of the more powerful male. Thus there developed a balance of opposites, the desire for contact balanced by a need for avoidance, the more powerful physique of the male balanced by his more powerful (or should we say 'more morbid?') imagination. If we ask what it was that early man feared in woman and from contact with her, the answer seems to be that he feared the contagion of her female qualities as likely to destroy his male strength and virility. Here we come back to those convenient terms *mana* and taboo. For as everyone is to some extent a repository of *mana*, contact with this *mana*, like contact with an electric current, is dangerous—or, to put it in rationalistic terms, everyone is to some extent afraid of his personality being infringed or invaded by the personality of others; and this danger is greater from one's sexual partner than from anyone else. But though we may thus put the taboo of sex on a reasonable footing, it ■ likely that the fear of being feminized was only a later, consciously formulated explanation of a more primitive attitude of unreasoning awe and horror of the sexual functions of the female, of the menstrual flow of blood and the process of parturition; while, partly on account of these associations, the sexual act itself had for its aftermath a feeling of malaise, was felt as spiritually dangerous. A classical example of this mystic horror is the case of the Australian aboriginal, who, finding

his wife had lain on his blanket during her menstruation, killed her, and died of terror in a fortnight.

The 'mystery of sex' was enormously enhanced for primitive man by the indistinctness and animistic complications of his world of experience. It is alleged that there ■ tribes still existing who are ignorant of the father's part in conception; and the folklore of historic peoples, as in the story of Danaë and the golden shafts of sunlight, seems to reflect a similar state of ignorance. But it is more likely that it was not so much ignorance in ■ positive and absolute sense as lack of imaginative restraint, and of ■ sense of the possible, falling in with developing animistic ways of thought, that led to belief in the impregnation of a woman by an animal or vegetable soul, and subsequent union in her child of a human body and non-human soul. The creation no less than the extinction of a soul was a possibility that could hardly be allowed for in early thought. If the father or mother, or both together, could not produce a new soul without surrendering their own, its arrival had otherwise to be accounted for; and if it was believed that the child arrived in the womb at the moment of quickening, and that by consuming the flesh of an animal one acquired a portion of its soul, then ■ causal relation might readily be established between the quickening and the life-giving soul of whatever animal the mother had just previously been eating. However that may be, the universally current folklore tales of human-animal metamorphoses, as in the story of the Swan Maiden and of Beauty and the Beast, seem still to provide in our nurseries an echo from a Glacial Age of Innocence.

In all ages and societies the most powerful of all taboos has been the taboo of sex, and the sentiment inspiring it we must accept as one of the fundamental characteristics of humanity. But in this as in other spheres the taboo sentiment merges into, or is a form of, the religious sentiment. Horror and avoidance and worship and reverence are the extreme shades of a single range of feeling; and the material remains of pleistocene man provide evidence that woman, or perhaps we should say, the sexual functions of the female, shared with animals and with the dead the earliest religious honours. The association of the female principle with the seasonal growth of vegetation probably developed only with the domestication of plants and animals. But whatever may be thought of the thelymorphic figurines of the upper palaeolithic, the far more ancient ■ of cowries ■ amulets is

evidence that the roots of female veneration, as doubtless also of sexual taboos, go far down into the soil of primitive mind.

Our inevitable ignorance makes any precise conclusions about early customs and beliefs hazardous and unprofitable. Among modern uncivilized peoples there is a bewildering variety of custom and belief and social organization; and though it may be possible to select some particular element of culture and show that it has an extremely wide distribution, the more fully any local culture-complex is studied, the more it is found to have a unique organic character of its own, and superficially similar customs in different areas are found to differ radically in their social and psychological significance. This great variety and complexity of modern cultural traditions is undoubtedly due in part to the many migrations and movements of groups and individuals all over the world in post-glacial times, which have produced everywhere blending and multiplication of earlier, simpler patterns. But this process was also going on, at a slower rate, all through the vastly longer stretch of glacial time; and variety and complexity must be regarded as a fundamental characteristic of all human society and mind. Just as in the archaeological field the accumulation of knowledge has broken up the simplicity of the earlier evolutionary classification of industrial stages, so we must assume that at every stage of mental and cultural evolution there were local and individual and periodic variety and complexity. Thus if we postulate animism (that is, the attribution of personality to all objects of thought) as a universal stage of religion, or the dance as the original of all magical and religious rites, we must recognize that this is a mere abstract summary of a great number of distinct and unique cultural traditions, which developed at different times and places. In fine the original development of human mind and culture took place in the same way as the development of the several historical civilizations; but while in the historical context we have some knowledge of the series of particular and unique events which constitute it, in the prehistorical context we have none.

A second general conclusion is that, instead of contrasting the mind and world of primitive man with that of modern civilized man, as Lévy-Bruhl does, we ought rather to regard civilized mind as a special branch or department of human mind in general, psychologically and socially as well as in time and space, and scientific thought and reality as a still narrower section within the

department of civilization. The scientifically minded anthropologist or archaeologist is inclined to make his scientific thinking the norm of civilized mentality and behaviour; whereas the truth is that, if we take the whole extent of civilized life and thought, from its earliest beginnings in Mesopotamia and Egypt, and over Asia as well as Europe, art and magic and religion have played — incomparably larger part than logical and scientific thought; and even the modern scientist in his personal and social and political activities is still moved to a large extent by impulses and motives which he shares with the unscientific and uncivilized man. Though I cannot subscribe to Jung's theory of a 'collective unconscious', and far less to the wild mythology of the Freudians, I think we must acknowledge the vital contribution which the work of the psycho-analytic schools have made to our understanding of primitive mentality and of ourselves. If it is true that the savage displays in many everyday situations just the same sort of practical attitude as ourselves, it is no less true that his ritual patterns of behaviour, his magic formulations of desire, his mythopoeic imagination and susceptibility to crowd-emotion, all survive in us, covered up by higher layers of consciousness, but still operative. Primitive mind, then, is not to be regarded as a "sort of abandoned field of rubbish",¹ but rather as the basement on which our house is built.

One last point. I began this chapter by attacking the 'intellectualist fallacy'; but in trying to explain the roots of religious behaviour and belief I seem perhaps to have fallen into the same error myself, in so far as I have attributed the primitive attitude to death and animals and sex to ignorance. Perhaps the error is hardly avoidable. But I think that we should recognize that it is an error, and that our last word should be that the prime cause of religion was the religious *sentiment* of primitive humanity, which is something as original and underivative as any other specifically human faculty or characteristic. *Homo Fingens*, not *Homo Sapiens*, should be our title.

NOTES

¹ *The Golden Bough* (3rd. edn.), Part I, Vol. I, pp. 52-54 and 237-240.

² *Op. cit.*, p. 499. I cannot forbear also quoting here the contrasted but to me equally objectionable comment of Professor Gordon Childe in his *What Happened in History* (1942), p. 36: "It is symptomatic of the

tenacity of tradition that the practice of sprinkling the dead with ochre persisted for 20,000 years, long after experience should have convinced everyone of its futility!" Are we then, I ask, in this atomic age, are even the most materialist and Marxist of us, completely cured of 'futile' activity? Or is the standard of historical judgment to be reduced to the terms of Futility versus Utility? Utility for what?

* *Op. cit.*, p. 96. What is said here on the development of concepts seems at variance with the post-Koffka account of Mental Growth in Man in Chap. VIII.

¹ McDougall's well-known attempt, in Chapter III of his *Social Psychology*, to link the basic types of human feeling, anger, fear and the rest, with appropriate modes of 'instinctive' behaviour fails to overcome the obvious difficulty that there is no particular and innate pattern of aggression or avoidance or self-abasement; while on the other hand the instinctive behaviour-patterns of animals, though doubtless accompanied by some kind of subjective feeling, are not (in human terms) 'emotional' but 'deliberate and purposeful', and are rather comparable in their character to the muscular co-ordinations directed towards a particular end, such as driving a car or using a typewriter, which become automatic by use—except of course that the latter are not innate. I think we see illustrated here the logical impossibility of transcending the human-subjective standpoint which is focal to all thought and experience.

² *Human Speech* (1930), p. 132 ■ *seq.*

³ Cf. G. A. de Laguna, *Speech: Its Function and Development* (1927), from which a good deal of this argument is taken.

⁴ The word 'religion' is held to be derived from a root meaning 'to bind', and this suggests its original function as the binding force of ■ social group.

⁵ We may notice the following pronouncements on the subject: (a) of Frazer, that religion is a conciliation of superhuman power, magic an erroneous application of the law of causality; (b) of Malinowski, that magical rites have a definite practical purpose known to the practiser, religious rites have no purpose but are an end in themselves; (c) of Westermarck, that religion tries to influence supernatural beings by personal means, such as gifts, flattery and the like, magic by mechanical means which cannot be resisted; (d) of Durkheim, that religious rites ■ socially obligatory, magical optional. With all these we may contrast James Leuba's definition of religion as a particular kind of activity or mode of behaviour, which it is impossible for us to identify with any particular emotion or belief. Cf. *The Psychological Origin and the Nature of Religion* (1909), p. 8.

⁶ *The Origins of Religion* (1935), Chap. I.

⁷ Cf. K. Koffka, *op. cit.*, pp. 339-340.

⁸ See A. R. Radcliffe-Brown, *Taboo* (1939).

⁹ The quotation is from the article on *Anthropology* by Malinowski in the Thirteenth Edition of the *Encyclopaedia Britannica* (Vol. I, p. 133).

¹⁴ *Loc. cit.*

¹⁴ C. G. Jung, *Contributions to Analytical Psychology* (1928), pp. 116-117 and 118-119: "We have then to describe and to explain ■ building the upper storey of which was erected in the nineteenth century; the ground-floor dates from the sixteenth century, and a careful examination of the masonry discloses that it was reconstructed from ■ dwelling-tower of the eleventh century. In the cellar we discover Roman foundation walls, and under the cellar a filled-in cave, in the floor of which stone tools are found, and remnants of glacial fauna in the layers below. That would be a sort of picture of our mental structure. We live in the upper storey, and are only dimly aware that our lower storey is somewhat old-fashioned. As to what lies beneath the superficial crust of the earth we remain quite unconscious."

CHAPTER IX

PRIMITIVE SOCIETY

FORMS OF SOCIETY and forms of mind are the external and internal faces of a single actuality. All mind and consciousness is personal and individual, and the concept of a 'group consciousness', or a 'collective unconscious',¹ involves in my opinion a contradiction in terms; but individual persons exist and think only as members of a social group, and what they are and do, they are and do only in relation to the group which they constitute; so that the history of mind and the history of society is one and the same, and individual psychology is a more abstract science than social psychology, or anthropology. The subject of this chapter, then, is no different from the last; but we approach it from a different direction.

Modern food-gathering and hunting peoples are found, all over the world, living in small groups, ranging in numbers from a dozen to some 200 individuals. Such a group has to range over a wide area of country to obtain its food, and both its size and its distance from neighbouring groups are conditioned by the supply of animal and other food stuffs. The more abundant the game, the more large organized battues would 'pay'; but on the other hand there is an economic limit to the tract of country that can be covered by a single group, and when that limit is reached, the group must either break up into two or more groups, each with a separate hunting ground, or, if the adjoining territories are already occupied, cease to increase its numbers. We have plenty of evidence of such large organized battues in the late palaeolithic age; but by that time a high degree of social and industrial development had been reached, and it is unlikely that the earliest human groups, with their primitive weapons and primitive social organization, could have carried out expeditions on a similar scale. We may assume, then, that these earliest groups would have approximated in numbers to the lower rather than the higher limit of the scale. And since the climate, and economic balance of animal and vegetable life, must have remained stable for very

many centuries at a time, these primitive groups would have persisted from generation to generation with very little variation of numbers, each one, then ■ now, hunting and living off an area with recognized traditional bounds, maintaining some contact, regular or haphazard, with neighbours racially or linguistically akin, but for the most part isolated and independent.

What of the internal organization of such a group—was it divided into family units, like the average modern group of savage hunters, or was it a 'horde' with sexual promiscuity, or with the leader monopolizing to himself a 'harem' of the most sexually attractive young women, or with some other arrangement intermediate between monogamy and promiscuity? Most anthropologists of to-day are agreed in rejecting the theory, originally put forward by the American Lewis Morgan in 1877,¹ that humanity has progressed from primitive promiscuity through a stage of 'group marriage'—that is, the sharing of a number of related women by a number of related men—to the monogamous family of civilized times. In the first place it is recognized that the societies which use the classificatory system of relationship—that is, societies where the community is divided into two or more intermarrying groups ■ classes, and where a man calls all the males of his father's group and generation 'father', and all the females of his mother's group and generation 'mother'—are not in any sense 'primitive'; and that the system itself, so far from being a relic of the time when all the 'mothers' were shared by all the 'fathers', has resulted from an extension of the original terms of blood-relationship over a wider field, with a corresponding extension of the field of relationship within which marriage is prohibited. Secondly, it is the fact that individual mating is the rule in every known human society, both in the past and present, and the limitations and exceptions to the rule are probably quite ■ large and frequent among civilized as among uncivilized peoples. Anthropologists who have adduced instances of extra-marital sexual relations among the uncivilized as evidence of a 'vestigial' promiscuity seem to have forgotten how largely such relations have always figured in civilized and theoretically monogamous societies. There is the difference that among the uncivilized what may be called the mitigations of monogamy are often recognized by custom, and are provided for by the female sex ■ a whole, whereas among the civilized they are often illicit, and provided for to a large extent by a special class of females; but the actual degree of promiscuity is probably about the same in

both cases. Thirdly, there is the psychological impossibility of primitive man ever having passed from a supposed state of complete sexual anarchy, whether through some particular event or revolution of feeling, as in Freud's fantastic myth of the primeval parricide, or by gradual stages—which really amounts to the same thing, since these 'gradual stages' must have been a series of particular events at different times and places. Psychologically, the origin of conscious morality is hardly explicable except as arising out of a previous natural or pre-conscious habit; and since individual mating is found not only throughout mankind, but, as we have noticed in an earlier chapter, among the anthropoids, as well as among other mammals, and among birds, the logical conclusion is that the family, as well as the larger group of which it formed a unit, is an inheritance from man's pre-human past.⁸

The original family obviously did not involve marriage, as we understand the term. Marriage as a sacred and life-long union, entered into with religious ceremonies, probably developed only after the rise of the earliest civilizations, being confined in the first place to kings and sacred personages. What the aboriginal 'family' postulates is only the habit of individual mating over a series of years, varied with a good deal of polygamy and promiscuity, as indeed marriage always has been in historical time, and still is. Among primitive humanity, as among many uncivilized peoples to-day, permanent or semi-permanent mating may have started from the first pregnancy of the female partner rather than from first intercourse, and after an earlier 'sowing of wild oats' by both partners during adolescence. Again, variation in the numerical proportion of males to females might have led to the habit of polygyny in some groups and of polyandry in others; or it is possible that all three kinds of mating were combined in one community, as is the case with some Australian tribes, the young male first sharing his rights with others, then acquiring an individual mate, and finally establishing his claim over more than one. But all such modes and vagaries of sexual life, found all over the world to-day, are but variations of the one general rule, so it is likely that they always have been. The original and fundamental unit, the basis of all social and cultural development, we may take to have been the mother and her children and her mate.

The question of the origin of the human family is bound up with that of the origin and nature of the incest taboo, which in

— form or another invariably accompanies it. It is to be presumed (though I do not know that there is definite proof of it) that among the apes blood relationships are not recognized, and are no bar to sexual intercourse; while on the other hand it is not perhaps too much to say that the prohibition of incest is the most fundamental of all rules of human society. A great deal of discussion has taken place on the subject in recent years, but it would be fair to say that no one explanation has yet found general acceptance. Perhaps this is because there is no unitary explanation, the development of the taboo being due to a number of converging processes and events which are forever hidden from our sight by the lapse of time. But the topic is so central to our whole view of humanity and human origins that it is impossible to pass it by; and we can at least bring forward some probabilities, and, what is perhaps more important, discard some improbabilities.

Let us be clear, in the first place, what it is that has to be explained. We have already noticed that among many uncivilized peoples organized into totemic groups or classes the prohibition of sexual intercourse extends to all persons of the opposite sex within the group, all males of the same generation being reckoned as brothers and all females — sisters, and similarly with the upper and lower generations; — that while marriage with a cousin on one side (according — kinship is reckoned through the mother or the father) is normal and appropriate, marriage with even a third or fourth cousin on the other side, by which kinship is reckoned, is no less incestuous than marriage with one's natural sister, or mother. Now, as it is illogical to suppose that this complicated system of exogamic clans reflects a more primitive stage of sexual relations than the simple system of individual mating, so it seems to me — obvious psychological absurdity to suppose that the incest taboo could have originated in such a highly artificial form, or that mankind could have passed in a single step from promiscuity to such extreme scrupulosity. The totemic and exogamic systems found among the Australians, and some other hunting peoples like the Yakuts of Siberia and Blackfoot Indians of the North American Plains, are probably derived from, or a survival from, a more advanced culture-complex, which originated at a time when the cultivation of plants and cereals was causing a rapid rise of population. In any case such — development must have been preceded by the development of fully articulated speech, and of a fully articulated

society. The presumption therefore is that the original taboo, from which the more elaborate systems developed by an extension of ideas and society, was a prohibition of sexual intercourse within the family or fireside group: that is, it prohibited intercourse between brother and sister, son and mother, father and daughter. That is the original fact that we have to explain.

It cannot be explained, or dismissed, as a matter of 'instinct'. For it is not the case that brothers and sisters, or children and parents, recognize each other 'instinctively'—there could have been no Oedipus story, if it were—nor that, knowing each other, they invariably and 'instinctively' practise sexual avoidance: on the contrary incest is by no means uncommon, both in uncivilized and civilized societies, in spite of the social penalties and spiritual terrors attaching to it. The terms 'instinct' and 'taboo' are indeed contradictory, one implying an inherited and automatic pattern of behaviour, and the other a social tradition which in particular cases is exterior to the individual. The incest taboo is rather to be thought of as a particular case of the religious and ambivalent attitude to sex which is a fundamental characteristic of humanity: it must have grown up with the growth of the religious sentiment, and as part and parcel of the social tradition. But while in other cases the religious and ambivalent attitude is directed to all females—such, in this case it operates as it were selectively, making the feeling-relations of the individual towards certain members of the opposite sex, namely, his or her close family relations, the opposite of what they are to all other members of it. It is the particularity that we need to explain.

According to Westermarck the explanation is that "there is a remarkable absence of erotic feeling between persons living very closely together from childhood", and "in this, as in many other cases, sexual indifference is combined with the positive feeling of aversion when the act is thought of".⁴ Among the arguments adduced in support of this theory one is that among animals and mankind it is the general rule that sexual feeling is stimulated by novelty and dulled by familiarity, and another, that close inbreeding is detrimental to the species, and that the incest taboo developed by a process of natural selection. These arguments have been severely, and I think to some extent rightly, criticized. For the mere indifference induced by familiarity, and especially that induced by repeated sexual intercourse, seems to me to have nothing whatever to do with the repugnance to sexual intercourse in the first place which is felt by members of the same family

towards each other. Nor can the supposed ill effects of inbreeding, which are themselves highly dubious, explain the character of a sentiment which is not 'instinctive', but a matter of social tradition. On the other hand Westermarck is surely right in arguing, as against Freud and Frazer, that laws express the feelings of the community, and that the universality of the laws against incest, as of those against sodomy, or matricide, is proof, not of a general and deeply rooted propensity to such acts, but of a general and deeply rooted abhorrence of them. But abhorrence can hardly arise out of indifference; and Westermarck's theory is greatly strengthened, and the objections to it are removed, if we suppose, with Malinowski,¹ that in childhood a strong positive bond of sentiment is established between brothers and sisters and parents and children, which subsequently, when the latter reach adolescence, comes into conflict with the newly awakened sexual desire. This conflict the Freudian theory misrepresents through its indiscriminate use of the term 'sexual'.² For while it is certainly true, and has an important bearing on our present topic, that the psycho-physical relations between a mother and her offspring parallel in certain ways the sexual relations between a man and a woman, the simple fact is that in the earliest and most intimate stages the relationship is exactly the same whether the child be son or daughter; and similarly, the early sentimental bond between brother and sister is of the same kind as that between brother and brother, or sister and sister. It is only as the *differentiae* of sex begin to develop in childhood that the relationship begins to change according to the sex of the individual involved. Now if we postulate the development in very early childhood of what may be called a 'family sentiment', which resembles in some ways love between the sexes but essentially differs from it, and if we further agree with the psychoanalysts on the great importance of the early years in the development of the individual's emotional complex, then we have a fairly satisfactory psychological explanation of the incest taboo in normal cases, and of the development of an incest complex in abnormal or morbid cases. For it is because the awakening sexual impulse of the adolescent male contrasts so strongly with the already existing bonds of 'innocent' or infantine sentiment uniting him with the females of his own family, that the idea of sexual intercourse with them is normally so repugnant; and it is only when the two conflicting motives of conduct are confused, either through a premature growth of the sex instinct, or hyper-sensibility, or some

other cause, that the morbid conditions postulated in Freud's theory arise. As I believe that this is the reason why the idea of incest is normally repulsive to the civilized man, ■ it seems plausible to suppose that the feeling of repulsion originally developed with the establishment of the family as a psychical as well as an economic unit.

Psycho-analytic theory has tended to concentrate attention on the son-mother relation, and the attitude of the adolescent male; but in the establishment of the taboo the psychological reactions of the other members of the family group were probably of equal importance, and the conflict of feeling must in fact (Freudian theories notwithstanding) have arisen much more often and more strongly in the case of brother-sister and father-daughter relations. Thus we must assume that the repulsion to incestuous relations would have been felt no less strongly, for similar psychological reasons, by the females, as a strong particular reinforcement of their general attitude of passive reluctance towards the pursuing male; while in the case of the parents it would be reinforced by sexual jealousy both of the mates towards each other, and of the elder towards the younger generation. The psychical obstacles to incestuous desire would seem likely on the face of it to have been weakest in the case of the father, with his male authority and mature sexual experience, and probably father-daughter incest has always been commoner than the other two forms in societies where there has been unimpeded access at and after adolescence. That the taboo against it is no less basic to society may have been due to the strong reinforcement of male religious scrupulosity by the jealousy and 'sexual solidarity' of the females. In any case Freud's picture of the primeval man as a tyrant ruling over his 'horde' by brute force and subjecting all the females in it to his lust is as remote from the probabilities as any theory well could be.

It may be objected to this explanation that in some uncivilized societies of to-day where the incest taboo operates most strongly, brothers and sisters are rigidly secluded from one another at ■ early age, while indulging at the same time in precocious sexual play with other children; so that the supposed contrast between the family bond and sexual feeling would have little opportunity to develop. But such conditions we have no good reason for regarding as primitive. Rather this early separation is evidence of a later exaggerated development of the taboo, the result perhaps of the growth of pre-adolescent sensuality, itself the con-

sequence of social degeneration and a tropical climate, and which may well produce in turn consequences the very opposite of those intended; for it seems that in such societies the occurrence of incestuous desires is by no means uncommon.⁷ It is true, however, and needs to be emphasized, that the psychological situation is inseparable from the social, and that the taboo could only have developed within a specific social framework, which we need to envisage and give form to, as an integral part of our explanation.

In a previous chapter we noticed that among the apes the individual life seems to have three, or perhaps four, main stages: first, infancy and childhood within the 'family circle'; second, adolescence, when the young of both sexes leave the family circle and live together in bands, eventually pairing off with one another; third, mated life, when the adult male lives with his female partner or partners, and her or their progeny; and perhaps fourth, old age, when the male at least abandons mated life, either voluntarily or perforce, and lives solitary. We may legitimately assume that the three main stages of childhood, adolescence and mated life prevailed also among the stock directly ancestral to humanity. But this pre-human pattern of life must have been profoundly modified by the growth of specifically human forms of life, whose probable effects we must briefly consider. Firstly, the mastery and use of fire would have helped to concentrate and solidify as it were the human group. For if one of its main purposes from the first was protection from other animals, especially at night, taking the place of the earlier refuge in the trees, the groups of adolescents would no longer be free to wander at will, and every individual at each stage of life would have become a recognized member of a particular fireside group.⁸ Secondly, and more certainly and importantly, the development of the hunting economy would have opened up a wide breach between the hunting males on the one hand and the women and children on the other, the former going off to the hunt, individually or in small bands, while the women stayed behind to gather vegetable food, look after the children, and carry out other 'domestic' duties, such as tending the fire, getting water, preparing skins for use; and as larger expeditions came to be organized, the absences would have grown more prolonged. This physical separation, and the division of economic functions, which possibly corresponded, and helped to produce, a widening of the physical and mental differences between the sexes, must have strongly impressed itself upon the waking mind of humanity, opening up a

gulf of strangeness and mystery between male and female, and so encouraging the growth of sexual taboos. But it would also have particularly affected the stages of male growth; for as the young male child would belong at first, with his sisters, to the female world of the camp, so the transition from this childhood world to the adult male world of hunting, and of sex experience, would have been all the more profound in its mental impact and reverberations: the opposition between the family bond and his newly awakened sexual appetite would be reinforced by a host of other associations, when he left behind the childish life of the camp, and was apprenticed to the arts and dangers of the hunt. And thirdly, the development of the hunting craft, and of handicrafts, would have compelled a further social and psychological revolution, the younger generation remaining under the control and tuition of the adults, instead of being free to wander off and make their own way, uninhibited, amid the perils of wild nature.

Among nearly all uncivilized peoples of the modern world the onset of puberty is celebrated by rites of initiation, accompanied often with painful ordeals and mutilations. In many cases also the adolescent males have their own separate quarters, where they live together until they take a mate and start a family of their own. Though we cannot call either of these two customs 'primitive' in the strict sense, it seems likely that they go back at least to the end of the Glacial Age, and reflect a more primitive stage which included the early separation of the young males (and perhaps, the young females as well) from the family group. If we are to use the word 'instinct' at all in this context, perhaps we might apply it most legitimately to the tendency of the young adolescent male in every age and clime to seek adventure, to avoiding his own family circle, and sharing the company of his male peers. Whether we regard such behaviour as a natural expression of his awakening sexual impulse, or as a product of the social milieu, it probably dates back to the primal age of humanity, and is a modified survival of the break-up of the pre-human family unit. But with the establishment of human society and a cultural tradition this haphazard wandering off would have been moralized into a form of social education and training for adult life, forming as it were the positive face of the negative incest taboo. Its echo survives perhaps in the universal folk-lore tale of the young 'prince' leaving home and setting forth on his adventures.

But at this point the curtain of our ignorance inevitably falls, and it would be futile to speculate about the details of the

earliest social institutions. Instead we may summarize some 'reasonable conclusions' on the subject as follows:

1. The family unit of a male with one or more adult females and their progeny is an inheritance from pre-human times; and there was never at any time a stage of sexual promiscuity.

2. In this aboriginal family there were three main stages of individual life: childhood in the family circle, an adolescent period of 'running wild' and sexual adventure and securing a mate, and adult life as a mate and parent.

3. The development of the specifically human habits and masteries was accompanied by the growth of specifically human sentiments and social institutions. In particular, the establishment of the hearth defined and gave new meaning to the 'family circle'; the growth of the hunting economy, with its distinction of male and female economic functions, and frequent physical separation of the sexes, opened a gulf of strangeness and mystery between the sexes, leading to the growth of sexual taboos; and the development of traditional male and female crafts, that had to be learned anew by each generation, established a new relation between the older and younger generation, of authority and responsibility on the one hand and of dependence and more or less willing obedience on the other.

4. With the growth of a religious attitude to sex on the one hand and of a family sentiment on the other, a conflict of feeling arose in the adolescent consciousness between early memories and later social and sexual experiences; and this encouraged, or accompanied, the custom of sexual avoidance between members of the same family circle, first passively accepted in adolescence, and then actively imposed in later adult life on the rising generation.

5. A later expansion of population led to an extension of terms of relationship over a wider field, and highly complex and artificial systems of totemic kinship came to be established, such as are found among many modern uncivilized peoples.

There is one further point: that exceptions to, or contraventions of, the incest taboo are to be thought of, not as survivals of some primeval state before the taboo was imposed, or as manifestations of the 'natural' incestuous desires of mankind, but rather as a much later partial break-up of the traditional morality through the more or less deliberate action of particular groups or individuals. For instance, the well-known practice of brother-sister marriage in the Egyptian royal family, and the wide-spread

prevalence of creation myths associated with the union of a divine brother and sister—Isis and Osiris in Egypt, Kronos and Rhea, Zeus and Hera among the Hellenes, Izanagi and Izanami in Japan—seem to be associated with a particular culture-complex which included the cultivation of cereals and rites of human sacrifice; and whether or not the practice of royal incest originated through the determination of some royal personage to assert the absolute separation of the royal family from the ordinary run of mortals, or the myth and rite originated, like the rite of human sacrifice itself, as a deliberate attempt magically to interrupt and control the 'natural order', both custom and myth, in as far as they insist on the fact of incest, imply that it is something unnatural and extraordinary, and so recognize the importance of the existing taboo upon it. Again, if individual cases of incest have occurred, and still occur, in nearly every kind of civilized and uncivilized society, they are to be attributed, like other forms of crime or abnormal behaviour, to the imbecility of individual character, not to the breaking out of some deep-seated impulse common to all mankind.

In savage societies custom and public feeling take the place of law and government. There are no hereditary chiefs, because there is no heritable wealth. Authority and leadership go to those who can claim it on personal grounds, of hunting skill and prowess, of age and experience, or of those spiritual gifts which equip a man for the calling of shaman or magician. Such gifts may sometimes be hereditary; but they require also, for their effective development, as any gift of genius does, a devoted life, a strength of character above the ordinary. Extent of years even does not confer authority without its proper accompaniment of mature experience, social gravity and traditional lore. So it is among savages, and so we may suppose it to have been in palaeolithic times, after the specifically human traditions of life had been established. What we have to rule out is the idea that brute force then reigned supreme. If it had, no cultural tradition could ever have been established. Rather morality is as old as humanity itself, and the very condition of its emergence, and of the use of tools and language, having grown, with the growth of consciousness, out of pre-human patterns of social behaviour. Indeed primitive man was more moral than civilized man, in the sense that his behaviour was less individualized and more under the control of group feeling and the traditional mores of the community.

As the tradition expanded, and language and consciousness became more articulate, so we may suppose the control of the group fell more into the control of its leading individuals, the elders and magicians whose greater experience and knowledge of crafts and traditional rites gave them an inestimable advantage over the rest, and made them the natural guides and interpreters of the common will. Thus we might say that the earliest form of government was a gerontocracy, or rule of the old men. It is true of course that 'old age' in our sense hardly existed in primitive times, not more than one person in ten living beyond the age of forty*; so that the elders were 'old men' only in a relative sense. But the very rarity of survival into what we call 'middle age' would have conferred a higher prestige upon the survivors. A stationary population, which would have been the normal condition of humanity over huge stretches of time, implies a low birth-rate and high rate of infant mortality, assisted perhaps in more advanced communities by the practice of infanticide. Professor Vallois' figures show that at least forty per cent of the population died before reaching the age of twenty-one; so that the prospects of survival were not very high for the young and un-experienced. Emphatically the 'Youth of the Race' was no time of youthful wildness and exuberance: it was rather an age of rigid social structures, and of scruple and respect for grey-haired old.

Reference has already been made to the use among modern uncivilized peoples of initiatory rites at puberty, accompanied often with painful ordeals and mutilations; and the mutilated hands depicted on the walls of the cave at Gargas and elsewhere suggest that similarly gruesome rites were used in palaeolithic times. These ordeals, like the flogging of the Spartan youths before the altar of Artemis Orthia described by Pausanias, must be regarded as manifestations of a primitive impulse towards the suffering and infliction of pain, which is bound up in some obscure way both with the sexual urge and the religious sentiment. Here is one of the deep-lying roots of the idea of sacrifice, of the persecutions and self-torturing austerities of religious zealots and ascetics, of the human sacrifices, lust-murders and all the frightful catalogue of human cruelties through the ages, as also perhaps of the practice of scarification, tattooing and other fashions of physical deformation and mutilation. But as the complement of this algolagnic impulse—to use Havelock Ellis' term, which includes the two opposite forms of 'sadism' and 'masochism'—this lust

for pain, we have to take account of the conscious or unconscious desire for spiritual and social dominance on the part of those exercising authority, which may take extreme form in deliberate cruelty. By prolonging a sacrificial or magico-religious rite into a series of painfully impressive ordeals, the elder generation established its hold all the more firmly over the younger, who were trained thereby to play their part as men, but also, and no less importantly, to submit without question to the sacred traditions of which they were the pupils and inheritors. Among some Australian tribes the various stages of initiation are not completed until a man has reached the age of twenty-five at least, and the latest stages as well as the earlier involve an unquestioning submission to the older men, and a series of ordeals taxing the strength and endurance of the participants to the utmost.¹⁶ The physical ordeals, moreover, are accompanied by a spiritual bombardment with magic tricks and bogies calculated to inspire the neophyte with wholesome awe of spiritual powers.

These customs of the Australians are not, properly speaking, primitive; but it appears, from their material remains, that some late palaeolithic societies had already developed somewhat similar rites. We know, for instance, that they used the bull-roarer, perhaps the most potent of all instruments of awe. All over the world it has been found associated particularly with rites of initiation: everywhere it is invested with the highest degree of magic sanctity, and the secret of it is carefully guarded from the women and children, who are filled with ghostly terror at the mysterious sounds. We are apt to forget that the savage is more a 'child of nature' than the civilized man is, that he has been conditioned by his education no less thoroughly than the young citizen of a modern totalitarian state. Indeed the totalitarian ideal seems to have been perfectly realized in savage times, the unity of feeling and belief within the tribe being maintained as effectively by the spiritual authority of the elders and magicians as by a state organized system of propaganda and persecution. Yet we are not to suppose that obedience to custom and tradition was 'instinctive'. Rules of taboo were doubtless broken by palaeolithic savages as they sometimes are by their modern descendants. One abuse to which the development of gerontocracy leads is that the old men, the guardians of tradition, extend and enforce the taboo of sex in such a way as to reserve to themselves a supply of the sexually attractive younger females. It has been suggested that the institution of marriage by capture and of certain types of

secret society may have been due to the revolt of the young males against the sexual tyranny of their elders. Though this was probably a post-glacial development, we may confidently assume that sexual jealousy and abuses of power were not unknown in earlier times.

Another point to notice is that the initiation ceremony includes, in many modern cases, a symbolic re-birth or change of identity, a part of the body being sacrificed to the female *mana* in order to secure the maleness of the rest. Among some Australian tribes, for instance, two of the boy's front teeth are knocked out, and these are handed over to the mother or to certain female relatives, or are thrown away in a direction which is symbolically female: several late palaeolithic skulls have been found with the front teeth similarly removed. In many cases also the initiate receives a new name, which is the mark of his new identity. Here we have the origin of a whole class of religious cults and beliefs, the historical development of which can be traced most clearly in Egypt; but what was originally a change of social status, conceived in religious form, was turned later into a spiritual re-birth and passage from a mortal world of flesh into an immortal world of heavenly redemption.

As complement to these ascetic rites we have, dating probably from an even more immemorial antiquity, the orgy, that is, a religious festival of joy and licence. Long ages before man looked up to the sun in worship or celebrated the cycle of the agricultural seasons, we may suppose they responded physiologically to the yearly cycle of the weather, and that dancing and mating followed the return of the sun after the winter season of cold and rain, of plenty after penury and abstinence. But with the growth of conscience and taboo this spontaneous outburst of feeling took on a social and religious character. It was an occasion of sexual and spiritual release from the tensions and prohibitions of ordinary life. That has been the universal characteristic of the religious orgy among peoples in every stage of culture, in the Babylonian rites of Ishtar, the Dionysia of the Hellenes and Saturnalia of the Romans, in the festivals of mediaeval Europe, the Australian corroborees, the *hula* dances of the Polynesians, the feast of Huitzilopochtli among the ancient Mexicans. But this temporary breakdown of the moral code was in all cases a compensatory guarantee of its normal sanctity, in the same way that any holiday implies the normal working routine of life from which it is a relaxation. Moreover it was essentially religious, in that the

individual was merged in the common will and feeling of the community. This mystical communion of souls found its most intense expression in the ritual dance, which is the root from which sprang many later specifically religious ceremonies and festivals as well as the drama of European, and probably also non-European peoples.

This festival of sex and religion also provided an occasion when wider contacts were established with neighbouring groups. The *Engwura* of the Australians may stand as an advanced type of such a tribal synod, which began with the summoning of widely scattered groups to the meeting, and besides dances and corroborees included a number of traditional *Quabara* or ritual ceremonies performed for the instruction of the younger men, and of informal councils between their elders for the repetition and discussion of tribal lore and traditions. The whole affair might last for several months, and in its combined character of a political assembly and religious celebration may be compared with many periodic gatherings of ancient and mediæval times, the Olympic Games of the Hellenes, the annual concourse of Syrians to the Spring Festival of Cybele at Hieropolis, and of the Gallic states to the Roman Lugdunum, the pilgrimage fair at Mecca, long antedating the establishment of Islam, and the Eisteddfod of the Welsh. The celebrated open station at Solutr  on the Sa ne, with its huge accumulations of animal bones and debris of human occupation, provides evidence that similar meetings were held in prehistoric times; and the relation of styles between the three main art centres of the Dordogne, the French Pyrenees and Cantabria, points to the same conclusion. At the opening, or at the close, of the summer hunting we may suppose there was a regular annual meeting of the widely scattered tribes, all sharing to some extent the same speech and customs and traditions, and that these meetings, besides their religious and orgiastic function, provided the means for the interchange and propagation of new ideas and techniques in art and industry, for the exchange of goods by barter, and perhaps for the allotment of hunting grounds and settlement of inter-tribal disputes. Here in fine we may trace the earliest embryonic forms of nationality and witenagemot.

The fire-side, the permanent camp, and the summer meeting ground—these three stages of local grouping seem to correspond with the three stages of primitive social organization, the family, the local sept or group, the race or people. They are not to be thought of as necessarily successive stages. For if the primary

social unit was provided by the mated couple and their progeny, the communication of the earliest industrial traditions from continent to continent implies also the existence of wider cultural contacts. It is indeed profitless to speculate on the early stages of social growth. Primitive society takes shape before our eyes as a single looming whole, and not as an historical order of events. We know of no first ancestor, or legislator. The earliest humans or sub-humans we know of were of several races, differing more widely from each other than do the peoples of the modern world; and they were all already in possession of an industrial, and therefore, we must suppose, of a social tradition, the origins of which are indiscernible. The development of society we have to think of mainly in terms of a rising level of conscious mind, so gradual that it is impossible to delimit in subjective terms the boundaries of human and animal behaviour. It is indeed only in the upper stages of the palaeolithic that we feel ourselves in contact with creatures as fully human as ourselves. But these first 'modern men', Aurignacians and Magdalenians and the rest, were possessed then already of a social tradition of such vast antiquity, that compared with it our whole heritage from the historic past is but of yesterday.

NOTES

¹ Jung's term. Cf. *Mind and the Earth* in *Contributions to Analytical Psychology*.

² L. H. Morgan, *Ancient Society* (1877).

³ Cf. E. Westermarck, *A Short History of Marriage* (1926), Chap. I.

⁴ *Op. cit.*, p. 80.

⁵ *Sex and Repression in Savage Society* (1927), Part IV. Cf. Charles Robert Aldrich, *The Primitive Mind and Modern Civilization* (1931), p. 111.

⁶ Freud's theory in its anthropological aspects has been submitted to a devastating criticism in the first of Westermarck's *Three Essays on Sex and Marriage* (1934). Reference may also be made to the criticisms in Joseph Jastrow's *The House that Freud Built* (1932), in Ernest Crawley's *The Mystic Rite* (New edn., rev. by E. Besterman, 1927), and to Malinowski's books, *Crime and Custom in Savage Society* (1926), *Sex and Repression in Savage Society* (1927), and *The Sexual Life of Savages in North West Melanesia* (1929).

Freud is one of those people (Marx is another) about whom it is difficult if not impossible to write impartially: one is either of the Faith, or not of the Faith. In view of the statements in the text I should like to make it clear that I regard him as the Newton, or perhaps

rather the Galileo, of modern psychology, one of the great originaive thinkers who has revolutionized not only one department of our thought, but our whole universe. But for all his genius he was none the less a man of his age and country, his determinism and materialism and his sense of ■ equally a reflection of *fin-de-siècle* Viennese society; and he had the misfortune to think and write in German, which perhaps accounts in part for his dogmatic monism and extravagant hypostatizing of abstractions. Also there is no doubt that in the anthropological field he is seen at his weakest, the extent of his knowledge being in inverse relation to the extravagance of his speculation.

With regard to the famous 'Oedipus complex' I should like to add the following points:

1. A 'mother-fixation' is one of the commonest forms of sexual maladjustment in modern European society, and it is normally or invariably accompanied by open or suppressed hostility towards the father, expressing itself typically in the 'death-wish'. But there is no evidence, and from the nature of the case there can be no evidence, that this fixation derives from the relations established between mother and ■ in earliest infancy. The exactly similar relations existing at that period between mother and daughter should in that case make all females homosexuals. Moreover Malinowski has shown that in matrilinear societies the feeling of hate or rebellion is directed towards the mother's brother, who is responsible for the boy's education; while the father is a 'beloved, benevolent friend'. (*Sex and Repression*, p. 10). 'Is it not plain, then, that the development of the 'Oedipus complex' is due not to a physiological relationship but to the social and personal relationship existing within the family in childhood, and that the revolt against authority is a no less important element in it than sexual jealousy.'

2. In the early stages of human life, ■ in all stages of simian life, if we are to trust the observations of Zuckerman (*The Social Life of Monkeys and Apes*, pp. 312-313), feelings of pleasure and excitement tend to be diffused over the whole organism, so that all forms of heightened feeling tend to include a certain degree of genital excitement. With the approach of adolescence the feelings gradually become 'polarized' round specific types of activity and experience and sentiment; and the abnormalities and perversions of adult sexual life are due to ■ trauma or arrest of development during or before the adolescent period, which results in the 'polarization' of sexual feelings round one of these vague pre-adolescent associations, instead of round the sexual act proper. But everyone is not abnormal, and every abnormality is not traceable to the 'Oedipus complex'; and though we must recognize the central importance of the sex life in the development of personality, it is not the only element of personality, and to broadcast the term 'sexual' over the whole field of personality and experience deprives the term of logical significance.

* See Malinowski's *Sexual Life of Savages*, *passim*.

* There is a Bushman legend to the effect that originally men and

women lived separately, the men hunting on the mountains, the women food-gathering on the river banks, and that the men came in one by one to live with the women because they needed the fire which the women kept tended, but the men carelessly allowed to go out. See S. S. Dornan, *Pygmies and Bushmen of the Kalahari* (1925), pp. 172-174.

⁹ See H. V. Vallois, *La dureté de la vie chez l'homme fossile* in *l'Anthropologie*, Vol. 47, pp. 499-532.

¹⁰ Howitt records the significant confession of a young Australian after his initiation: "When I was a little boy I did not believe all I heard about the *joias*, but, when I saw the *gommeras* at the *kuringal* bringing them up from their insides, I believed it all." The *joias*, it should be explained, are crystals or other mysterious substances which the *gommera* or headman displays between his teeth at a certain stage of the *kuringal* or initiation ceremony, apparently producing them out of his stomach. A. W. Howitt, *Native Tribes of South-East Australia* (1904), p. 553.

CHAPTER X

THE PASSING OF THE HUNTING ECONOMY

THE MAGDALENIAN CULTURE was the ripe fruit of a way of life that had been maturing through myriads of years, and whose origin was identical with that of humanity. Probably during the period of its flourishing, if not indeed before, the first steps were being taken towards the new economy that was destined to supersede it. In Europe north of the Mediterranean a sub-arctic poverty of vegetation combined with an abundance of wild animal life provided conditions most suitable to a highly specialized hunting economy; elsewhere a much greater variety and abundance of vegetable food made food-gathering, as contrasted with hunting, more important, and so encouraged, or made possible, a gradual transition to a food-producing economy. When and how the first steps were taken from food-gathering to cultivation we can only conjecture; but we can be reasonably certain that they were taken somewhere within the now desert central zone stretching across North Africa and Hither Asia to northern India, that until the close of the Glacial Age the North more than held its own against the South in terms of cultural progress, and that the climatic revolution which proved fatal to the highly developed northern hunting economy stimulated elsewhere the decisive change over to an economy based on the domestication of plants and animals. The retreat of the old economy before the new has been going on ever since.

With the final passing of glacial conditions and increase of rainfall there was a change from tundra to forest conditions over the greater part of Europe; and the change was so continuous that the intermediate stage of steppe conditions occupied a comparatively short space of time. We may place within it the concluding stage of the Magdalenian age, when the art of the hunters was rapidly deteriorating. And when the change was completed, the old hunting life of the North-West was at an end. Many of the greater wild animals were gone, either extinguished by the climatic change, or having followed the retreating belt of

tundra to the North; and the open hunting grounds were over a great part of their extent covered with forest—not the forest of comparatively open glades which still survives in modern Europe, but an impenetrable thicket of trees, bushes and creepers, covering the whole country except where the chalk-downs allowed no rooting-ground, and through which streams and rivers made the only path. Heavy rainfall turned the valleys gradually into marsh. Under such conditions the hunters were reduced to the status of food-gatherers, living by the forest streams on a diet of fish and snails and roots and berries, and on a less certain and readily procurable supply of small game and vermin. Or they took refuge by the shore, and lived on a diet principally of shell-fish. In either case their prospects were fatally deteriorated.

The climatic changes were accompanied by a general shifting of land and sea levels and re-arrangement of continental outlines. The rise of shore levels led to the extension of the Mediterranean to its modern limits; and this was balanced by a corresponding shrinkage of the Eurasiatic Inland Sea of the Glacial Age into the land-locked waters of the Caspian and Aral Seas; while its western Black Sea gulf broke through, by way of the Bosphorus and Dardanelles, into the eastern end of the present Mediterranean. In the North-West the Atlantic advanced to the present coast-line of the Bay of Biscay and the English and Irish Channels, though the British Isles were not finally separated from each other and the Continent of Europe until the end of the transitional period. In the far North, which was the final refuge of the retreating glaciers, a more complicated series of changes first separated Scandinavia from the Continent by a sea-channel running from the Arctic to the North Sea, and which has been named 'Yoldia Sea', then closed up both ends of the channel into a shallow fresh-water lake, named 'Ancylus Lake' after its distinctive fresh-water mollusc, and finally opened again its western end to produce the present coast-line of the Baltic. During some of this time a bridge of land connected the eastern coast of England with Scandinavia.

We have seen in a previous chapter that the upper palaeolithic industries were, with the exception of the Kenya Châtelperronian, confined to Asia and Europe, and that in Africa industries of the mid-palaeolithic tradition continued on, and gradually merged into microlithic forms, such as the Sebilian of Upper Egypt, and the Capsian and Oranian of North Africa, which consist of pygmy flakes, generally less than an inch in length, and typically shaped

in the geometrical form of triangles, rhomboids, trapezes and segments of circles. It has been supposed that the Sebilian of Egypt was a transitional industry which adapted the Kenya upper palaeolithic to a microlithic form, and gave birth in turn to the microlithic industries of northern Africa. But Miss Caton Thompson condemns this supposition as 'fantastic and reprehensible', and suggests that the microlithic technique which became so general in the closing stages of the Glacial Age was due, not to diffusion of the technique from some single centre, but to "convergent evolution imposed on often unrelated palaeolithic societies by ecological change".⁴ It may be permissible to doubt whether ecological or environmental change can ever by itself be the cause of a technical invention, and to suggest that the marked individuality of the several African microlithic industries might possibly have been due to a period of increased desiccation isolating regions to which the germinal idea of the new technique was yet able to penetrate, or had previously penetrated. In any case it seems to have been connected in its origin with the invention of transverse hafting. For thousands of years previously points of flint or bone had been fitted to the end of spears and javelins; but for many of his ordinary tools palaeolithic man continued to use simple flint chips, of a size to be grasped in the fingers, and variously shaped and edged to suit his several needs. The introduction of transverse hafting and general use of handled tools caused an industrial revolution. Weight and size and variety of shape were now more easily provided in the wooden handle, and by different types of hafting; while the working edge was composed of a series of microliths, any of which could be individually replaced when damaged, so that the 'life' of the whole tool or weapon was extended indefinitely.⁵ In many cases microliths were mounted in a line, to provide a long, saw-like cutting edge: swords of this kind, fitted with a double row of obsidian flakes, were still being used by the pre-Columbian Americans at the time of Cortez' invasion. Probably also the increasing importance of the bow and arrow as a weapon, which seems to have been of African origin, caused a growing demand for pygmy flints as arrow-heads.

Whether the new technique had a single or multiple origin, it gradually interpenetrated and transformed the upper palaeolithic industries of Europe and Asia, and in course of time attained a almost world-wide distribution, being found in North, East and South Africa, in Mesopotamia and India as far east as the

Vindhya Hills, in Spain, northern Europe, the Crimea and the Kirghiz steppe. In Europe it had developed in Spain and Italy and southern Russia well before the close of the Glacial Age, and intrudes into the final stages of the Magdalenian, which, with the passing of glacial conditions, it finally replaces, in two related forms, the earlier Azilian mainly in the Pyrenees, southern France and Bavaria, the later Tardenoisian (named from the type station at La Fère-en-Tardenois) in northern France and Belgium. The Azilian takes its name from Le Mas d'Azil, a great tunnel in the Pyrenees department of Ariège, through which runs the river Arise for a distance of over 400 yards. Here, and elsewhere, alongside the microlithic forms the earlier palaeolithic flint and bone industries were carried on in the old tradition but with much less skill. Flat harpoons made of deer-horn, perforated for hafting, are very common, and provide evidence that fishing was still the chief means of livelihood. The dead were buried in caves, and covered with red ochre. But the most distinctive feature of the Azilian culture, and that which links it most clearly with Spain, are the painted pebbles with dots and bars and patterns in red ochre which have been found at several sites. At the grotto of Birseck, near Basle, a little cache of them was found, all of which had been intentionally broken. Clearly they had a magical significance. Many of them represent human figures; and probably the broken ones stood for models of human and other chattels offered to accompany the dead; for such a custom is of world-wide occurrence. Though the suggestion that they were alphabetical signs is certainly mistaken, it is not impossible that they were used as a kind of coinage; and they suggest comparison, in a far-off way, with the alphabetiform signs used among the Egyptians as magic tokens and ownership marks, both before and after the development of the hieroglyphic script. But it is also clear that they embody, in its final stage of symbolic degradation, the artistic tradition, not of the Magdalenians, but of the eastern Spanish school of art. Thus they illustrate on the one hand the final surrender of art to magic, and on the other the penetration of the more advanced Spanish culture into northern Europe.

To the east several cultures, the Ahrensburg (near Hamburg) in north Germany, Lyngby in Jutland and Swiderian in north Poland, derive from the East Gravettian of the upper palaeolithic, and lead on to the somewhat more prosperous Maglemosian of the western Baltic, so named from a large peat-moss near Multerup in Zealand. At this time the Baltic was still enclosed at its

western end to form the Ancylus lake; and from there a jut of land stretched westward by way of the Dogger Bank to Yorkshire, where this culture is also found, and where it came into contact with the Scottish Azilian. The Maglemosians were a fisher-folk living by the shore, or as at Maglemose itself, on a raft-like platform of wood built out over the shallows. They used boats, probably dug-out canoes, to fish in the shallow waters of the lake, and in winter sledges and skates for moving over its frozen surface. Their fish hooks, barbed harpoons or spear points, and bone and flint chisels seem a continuation of the Magdalenian tradition, while their microlithic flint industry shows Tardenoisian influences. But in the main they belong to the East European province; and their characteristic tool, a large flint fitted into a sleeve of deer's horn, perforated for hasting into a wooden handle, to form an axe or adze, derives through the earlier 'Lyngby axe' from a type of bone or ivory club or axe, in some cases perforated apparently to take a flint-head, which is found at Předmost; and it leads on to the polished stone axe or 'celt' which is typically neolithic. The decoration on their bone tools, mostly of simply geometric design, also belongs to the East European tradition as exemplified at Předmost and in South Russia. Besides fishing they trapped wild fowl and hunted the elk and aurochs; and they kept dogs. Possibly they had domesticated the dog from some wild European breed; but it seems more likely that these earliest European domestic dogs were derived from the Near East, which was the main area of domestication both for plants and animals. Thus the Maglemosians sum up in themselves as it were the last, transitional stage of the old hunting economy. Their tools still embody to some extent the palaeolithic tradition; but their axes represent the industrial response to the new forest conditions, and their dogs the first impact of the New Order of rising civilization.

The Maglemosians were Nordics, descendants, or at any rate kinsmen of the Gravettian proto-Nordics of Moravia and South Russia; and here too they provide a link between the existing Nordic peoples and the line of fossil types stretching back from Ofnet and the kurgans of South Russia through Brno and Předmost to Ehringsdorf and Krapina. Racially indeed Europe during this period was beginning to assume its familiar face, the big-boned, long-headed Nordics to the North and East, in the West a mixture of 'Early Europeans' of Crô-Magnon type with later-coming Mediterraneans, and in the central mountainous

region a round-headed people, whose skeletal remains have been found at Ofnet in Bavaria, Mugem in Portugal, Furfooz in Belgium and Aveline's Hole in the English Mendips. Whether these round-heads were immigrants from Anatolia and the Caucasus, or locally modified long-heads, or descendants from the earlier European round-heads, whose traces have been found at Solutré and elsewhere, is a matter of opinion: in any case there is no evidence that they were responsible for the introduction of new elements of culture from the Near East, as was once supposed. At Ofnet, as in some earlier sites, long-heads and round-heads are found together. The skulls, severed from the trunk while still covered with flesh, were buried closely bunched together in two pits filled with red ochre, and were ornamented with crowns and collars of perforated shells and deer-teeth. As at the earlier Moravian camp sites, the graves contain a disproportionate number of child burials, nineteen out of a total of thirty-three, and of these twelve under five years of age; and the evidence is that they were all killed by blows from a stone hatchet. The conclusion must be that they were victims of a raid by a hostile clan.¹

The Maglemosian culture came to an end about 7,000 years ago, as the gradual rise of the water level flooded over the land bridge between Sweden and Denmark to create the open Baltic, and separated England from the Continent. The increasing humidity and growth of forest greatly reduced the scope of the hunting economy, ■ they had already done further south. The survivors were reduced to a sea-shore existence and diet of shell-fish, augmented by a less certain supply of small forest animals and birds. This much deteriorated Ertebølle culture has left its trace in the huge mounds of refuse or 'kitchen middens' along the coast of Denmark. But in these piles of debris, along with the antler axes and old types of flake tools, are to be found ground and polished axe heads, and shards of coarse pottery, borrowed from the new agricultural paganism² spreading through Europe from its Near-Eastern home of origin. We have indeed now reached the time, about 2,500 B.C., when history has in the full sense begun, and are recording the secondary effects of the great revolution, the origins of which lie outside the scope of this volume. For after the close of the Glacial Age Europe north of the Alps became the poor client of more prosperous regions, and remained throughout all subsequent centuries until the opening of the Modern Age some five centuries ago one of the outer provinces of humanity.

All the main advances of culture during the European mesolithic and neolithic ages were but the outer ripples of events which had their source and origin elsewhere: they are part of the story of the expansion of the earliest civilizations, and bear the same relation to events in Sumer and Egypt as, say, the industrialization of Japan does to the industrial revolution in England, of which it was a consequence and copy.

With the advance of the peasants the old hunting economy retired farther into the forests and tundra of the North, of Russia and Finland and Scandinavia, where some simple naturalistic rock carvings of animals, accompanied by human forms, are a last gleam recalling the glories of Magdalenian art. By this path the palaeolithic arts were carried up into the Arctic circle, and transmitted to its modern inhabitants, as it was also probably a mixture of these earliest northward-migrating Nordic hunters with similar Mongoloid groups moving up further east in Siberia, that produced the present Ugrian peoples, Lapps, Finns, Samoyeds and the like, some of whom in the eighteenth century were still cave-dwellers living on the products of fishing and the chase, and ignorant of metals. Elsewhere the newly arriving peasants turned the still remaining savage aborigines into a population of helots, whom they used for the exploitation of the soil in much the same way as the natives of Africa and America have been used by Europeans in modern times.

In Africa there was a similar retreat of the hunters before the new economy. In Rhodesia and the Transvaal rock paintings and engravings have been found, the finest of which—and these also seem to be the earliest—rival in vitality and technical skill the best productions of the Franco-Cantabrian school, and bear witness to a highly developed savage culture. Who the artists were is uncertain, and so is the date of their flourishing. That their artistic tradition was ultimately derived from Europe is not unlikely; but there are no grounds for assuming any racial connection between the two peoples. We know that the Bushman race, now ■■ insignificant remnant confined to the Kalahari desert, was at one time spread ■■ far north as the region between Mt. Kilimanjaro and Lake Victoria, and possibly even into the valley of the upper Nile, and that the ancestors of the present-day Bushmen were still painting pictures on the rocks almost until within living memory. But the final unravelling of the racial and cultural skeins in South Africa's prehistoric past still remains to be done; and it must suffice to say that a highly developed savage

culture existed at one time in parts of central and southern Africa, which subsequently fell into eclipse, not as in the North, primarily as the result of a climatic revolution, but probably because of the gradual spreading through the continent, from an Egyptian source, of cattle breeding and corn growing, and the occupation of the best lands by barbarian and civilized invaders.

Everywhere there is the same indistinct tale of the gradual ousting of the savage hunters by nomads and agriculturalists, and retreat of the former to the remote nooks and corners of the world, the tropical forests of Africa and India and South-East Asia, the deserts of South Africa and Australia, the forests and tundra of the Far North. Modern savages include the Bushmen and Negrilloes of Africa, the Yukaghir of Siberia, the Semang and Sakai of Malaya, Andamanese, Negritoes of the Philippines, and Australians, and in America the Paiute of the Great Basin, many Indian tribes of the Great Plains, the Nootka, Kwakiutl and other fishing peoples of British Columbia, the Alakuluf and Yahgan of the southernmost tip of South America, who are still almost naked food-gatherers, living on mussels, berries, roots and animals of the chase, without pottery or kitchen utensils, and finally the Eskimoes of the Arctic. Many of these peoples seem doomed to the same fate as the already extinct Tasmanians, being unable to change their primitive ways, or adapt themselves to the complex modern world. Yet it is to be noticed that there have been some cases of reversion to savagery by formerly agricultural peoples. Such are the Punan, who live in small communities in the dense jungle at the head waters of the principal rivers of Borneo, but are probably descended from immigrants of mixed Indonesian and Mongoloid stock, who had domesticated plants and animals. So also the Cheyenne Indians of the North American Great Plains seem to have abandoned agriculture for a purely hunting economy, though they later accepted the domestic horse as a gift from civilization. At a time when innumerable herds of bison swarmed over the prairies they enjoyed perhaps an even more perfect 'hunters' paradise' than did the prehistoric Gravettians or Magdalenians of Europe; and they employed the leisure which the abundant food supply made possible in the development of an extraordinarily elaborate social and religious ceremonial, and the practice of polychrome painting on buffalo hides, the women confining themselves to geometrical patterns, while the men made figure paintings, and particularly scenes of the chase. But the introduction of civilized weapons exterminated almost within a

generation the vast herds of bison; and with their perishing there perished also the economy and the culture of the hunters.

Of all modern savages the Eskimoes have preserved, or preserved till lately, the palaeolithic economy most thoroughly and successfully. Their racial origins and connections are uncertain; but their culture almost certainly derives from Asia, and ultimately from the upper palaeolithic tradition.¹ Their finely carved tools of bone and ivory had a close resemblance to those used by the Magdalenians; they used harpoons, throwing-sticks and shaft-straighteners of similar form, and wore clothes of skins, prepared with stone scrapers; and they live by fishing and the chase. Their mode of life, judged by our civilized standards, is gross and beastly. But it is universally agreed that they are a happy people, and extremely gentle. Quarrelling and fighting, tyranny and social injustice, are not known among them. Women are treated as equals; and all enjoy their individual freedom.

NOTES

¹ See Note 9 to Chapter IV, and p. 149 *ante*.

² It has been suggested that the development of the microlithic industry depended on the presence of soft-wood trees, from which the tool-maker could provide a suitable mounting. Obviously the soft-wood trees were of use until the denizens of the area had either invented or learned from others the technique of transverse hafting; and shafted tools and weapons were in use long before this technique had developed. But to mount stone blades along the side of a wooden shaft is a much more delicate operation than fastening a stone point at the end of a stick or pole, and the workability of the wood becomes much more important. It is possible then that the spread of the microlithic technique through Europe proceeded alongside the spread of soft-wood forests.

³ See the article in *l'Anthropologie*, Vol. 47, pp. 654 *et seq.*, *De quoi sont morts les hommes d'Ofnet?*

⁴ I use the term 'paganism' in preference to the more usual term 'barbarism' for the stage of economy that preceded the rise of the earliest cities. My reason for this preference is given in the Introduction.

⁵ See p. 152 *ante*.

CONCLUSION

PALAEOLITHIC MAN AND HIS MODERN SUCCESSORS

WHEN WE TURN to contemplate our past heritage of human thought and action, we are struck, first of all, by the vast stretch of time that lies behind us, and the comparatively minute portion of it that is occupied by recorded history. Five thousand years take us back to the beginnings of it—a matter of some 250 generations. But behind that there stretches an almost incalculably longer prehistoric age, which a moderate estimate would make one hundred times as long—a matter of some 30,000 generations. Mere lapse of time, it may be said, has no significance in itself: it is the way it is filled that gives it significance. But though it is true that our lack of knowledge reduces the ages of man's savage past to the scale of a mere introductory chapter to any History of Civilization, this great discrepancy between the time-scale of historic and prehistoric time cannot be overlooked when we come to consider the nature of our humanity, and of our relation to the past.

It militates, in the first place, against the teleological view of the prehistoric past, as a mere preliminary stage of our humanity, leading up to the achievement of civilization. The term 'Dawn of History' is legitimately applied to the fourth millennium B.C., when the first cities were being built, and writing was being invented; but applied to the whole stretch of prehistoric time it is illogical and misleading. A dawn is no dawn that lasts twenty-three and three-quarters hours out of the twenty-four. Nor was the palaeolithic savage simply a childish or immature version of the civilized man, but rather, as I have tried to show in previous chapters, a different kind of man, with his own qualities and abilities and traditions. The development of civilization was not the inevitable culmination of everything that had gone before: it was rather a new, divergent path of life that certain human groups chose to enter, under a conjunction of circumstances that might not have recurred. We may perhaps put the point more clearly in this way: that while the later palaeolithic hunter was

greatly superior, in every way, to his remote 'Abbevillian' or 'Clactonian' predecessor, the city dweller of modern Europe, or of ancient Sumer, has not the same sort of superiority over the Magdalenian hunter, since he belongs, and is adapted to, a different sort of world; and he could not live in the palaeolithic world, any more than the Magdalenian hunter could live in ours. And this is largely true also of the savage and uncivilized peoples of to-day, for whom the choice is often not between savagery and civilization, but between remaining what they are or being ruined or exterminated.

Palaeolithic man, then, must be allowed to exist, so to speak, as an end in himself, the creator and inheritor of an immensely long social and industrial tradition, bearing within itself the seeds neither of civilization, nor of its own decay. It was the wild stock, we might say, on which civilization was grafted. But as the cultivated scion cannot flourish without the root-stock out of which it grows, so savagery provided the necessary foundation on which civilization was subsequently built up. And here again the temporal extent of the ages before civilization must be reckoned with, because during them not only was the cultural basis of human society established, but mind and consciousness evolved their specific form: during those unreckoned centuries Time was gradually channelling out the first chance and variable trickles of human feeling and behaviour into their later deeply grooved and irreversible course. Reckoning by the time scale we might conclude that we are 99 per cent savage, and one per cent civilized; or, to revert to Jung's metaphor, we live in a mental house, 99 per cent of the materials of which come from our prehistoric past.

There are two opposite views of the primeval state of mankind. For the poets and philosophers of antiquity, such as Hesiod and Horace, and the author of the Book of Genesis, it was a Golden Age of innocence and peace, before wealth and power and lustful desires corrupted the heart of men. According to the modern evolutionary and 'progressive' view on the other hand it was an age of brutal ignorance and wretchedness and violence, out of which man has gradually raised himself by the advance of knowledge and the arts of civilization. Champions of both these views are to be found among contemporary authors. In a recent book¹ Elliot Smith has zealously defended the thesis of the innate goodness of mankind, before it was corrupted

by civilization, and has supported his argument by quoting the favourable accounts that travellers have given of modern savages ranking lowest in the scale of material culture. Too often indeed such savages have been condemned as cruel and treacherous, merely because they have tried to defend themselves against civilized invaders who have occupied their hunting grounds and deprived them of their means of livelihood. Other writers, besides those quoted by Elliot Smith, have testified to their goodness and friendliness, when treated with reasonable kindness. A. C. Haddon, for instance, writes of the Bushmen that they were "always friendly and hospitable to strangers till dispossessed of their hunting grounds. They were not given to fighting one another, and were an unselfish, merry, cheerful race, with an intense love of freedom." And of the Fuegians he writes that "they do not recognise virtue, but they do not practise vice".*

But it does not follow that the inoffensive character of some modern savages is proof of a similar disposition among primeval mankind generally. Indeed it might well be argued that the present outcast state of these 'primitives' is the direct consequence of their inoffensiveness and inability to stand up for themselves: they are the amiable failures in the struggle, not merely for existence, but for power and glory and dominion. The evidence from palaeolithic times, vague and fragmentary as it is, lends no support to this optimistic view of our ancestors. For even if cannibalism, which seems to have been so widely prevalent, is not in itself proof of violent killing, the case of the skeleton from the es-Skhiâl cave of Mount Carmel, whose hip-joint had been smashed by a weapon before death, of the female skull from Crô-Magnon with a cleft in the forehead, made during life, of the detached and partly smashed skulls, mostly of women and children, ceremoniously buried at Osnet, and perhaps we might add the leaf-shaped spear-heads characteristic of the Solutrean industry, hint that the usual connotation of the word 'savagery' is not without some justification in the facts.

The opposite point of view is expressed with characteristic vigour in Professor Gordon Childe's two books, *Man Makes Himself* and *What Happened in History*,² where the story of humanity is presented as a series of 'industrial revolutions', whereby man has steadily, though not continuously, increased his technical skills and mastery of his environment. This gradual accumulation of practical skills and inventions, from the time of the earliest tool-making to our present stage of atom-splitting and travelling

faster than sound, is such an obvious fact that it does not need enlarging on; and it is most obvious in the field of prehistoric archaeology, because there are so few facts of any other kind; so that the archaeologist is likely to be particularly impressed with it. But, while recognizing this progress of scientific knowledge as one of the dominant features of the human scene, we can hardly avoid asking, in these days when scientific invention seems to threaten its own extinction, and the extinction of all civilization, whether there is not some other criterion of 'progress'. Childe's answer is, that as the biological success of any species is to be measured in terms of its increase in numbers, so the increase of population which has accompanied each great advance in technical skills and inventions provides an objective criterion of the 'success' of humanity.

This argument has been criticized by Julian Huxley⁴ on the ground that the most numerous species are those lowest in the biological scale, and if it is a matter of 'counting heads' we must yield the palm to the lowly plankton, as well as to many kinds of insect life, which flourish in uncountable millions. It is no less obnoxious to criticism on grounds of historical fact. For while man, from being originally one of the rarest of the higher mammals, has multiplied at an increasing rate and at the expense of other mammals through the centuries and millennia of his existence, within the most recent period increase of population has been slowed down or halted in just those parts of the world where the greatest advances in scientific knowledge and technical skills have been made; so that this 'objective criterion' has ceased to operate.⁵ Or else we shall have to say that the peoples of western Europe and North America are now less progressive and successful than those of countries like India and China, where population has continued to increase at a greater rate than ever before. The truth is that, whereas in the past, and in most Asiatic countries still, population has been kept in check by famine, pestilence and war, and has expanded automatically in response to any increase in the food supply, western man has now extended his control of natural processes to the control of birth, with the result that the 'mathematical relation' established by Childe no longer holds.⁶ It may be argued, and indeed is argued, that the western nations, by their limitation of the family, are heading for biological disaster. But that argument can hardly be decided one way or the other on 'objective' or 'mathematical' grounds. Moreover, the rate of increase or decrease of popula-

tion in modern scientific communities has become bound up with all sorts of 'purely subjective' values, and is quite unpredictable statistically. Again, is it not obvious that mere multiplication of the human species, if it is not presently checked and brought under control, must lead, either to an annihilating struggle for existence between national or super-national groups, or else to a lowering of the standard of life to a subsistence level, and to endemic famine and pestilence in a fatally overcrowded world?

If we are to set up any 'objective criterion' of human progress, I suggest that we might take the extension of the individual life span rather than increase of numbers for our standard. There can be no doubt that the average length of life has very greatly increased since palaeolithic times, and in western Europe at least during the last hundred years. Unfortunately the facts are very uncertain and hard to come by, and as far as I know there has been no attempt to work out estimates of average life span for different historical epochs and civilizations: it is somewhat of a shock to learn that in an early Bronze Age cemetery a quarter of the burials were of persons under the age of twenty-one, while in Lower Austria in 1829 over half the population died under the age of fourteen.* If a world-wide survey of life spans were possible, it would doubtless provide some interesting comparisons, and contrasts, with the graph of population increases. But even if the facts were fully available, can we logically identify mere extension of life, whether in terms of numbers of individuals, or of span of years, with 'progress', which is a term with inescapable moral and political associations? In the evolutionary series we find a succession of 'dominant types' emerging in successive geological ages, and of which mankind is the latest; and this dominance may be attributed to the functional efficiency of the type, as an organism, in relation to its environment. But with the passage of time and change of climatic and other conditions one dominant type falls away, and gives place to another, so that the whole evolutionary context presents us with what Julian Huxley calls 'a series of blind alleys'.* I doubt whether any biologist would be prepared to say that civilized man is a more efficient organism than savage man; and in any case has 'biological efficiency' anything to do with terms like 'progress' or 'success', as applied to human affairs? The truth is that every interpretation of history is inevitably 'subjective', in the sense that it expresses the moral and political views of the author and his age, Marx's assumption

that the "mode of production of material life determines the general character of the social, political and spiritual processes of life" being just as typically nineteenth century as is Momm-
sen's contemporary glorification of Caesarism. It is because an 'objective' or 'mathematical' estimate of human progress is a logical impossibility that every age must have its own historians; and Professor Childe's two books owe a great deal of their charm and brilliance to the strongly marked personal and political prejudices of the author. All that any individual can claim to do is to put forward an interpretation which does not distort the facts, and forms part of a consistent philosophy or point of view. His deductions from the facts need not be the only deductions that can be drawn from them: indeed it is hardly possible that they should be. But if they are in accord with them, and logically consistent in themselves, they may claim to possess some interest and value, and escape being condemned on a charge of mysticism and sentimentalism.¹⁰

As all moral qualities are individual qualities, so, I suggest, in every community from the first there have been individuals of varying disposition, and the opposite and complementary sentiments of love and jealousy, friendliness and hatred, kindness and cruelty, generosity and selfishness, have always been present in varying degrees and forms. It is true that moral comparisons are also possible between larger wholes, that group *A* may be described as kinder, or more suspicious, or more brutal, than group *B*. But that does not mean that every individual in group *A* is kinder, or more brutal, than every individual in group *B*, or that there is any one moral or intellectual quality which is found exclusively in one national or local group, and not in another. Generalizations of this sort are only true as rough averages, and the wider the field they try to cover the more uncertain and unreliable they become. So, when it comes to comparing as a class savages with civilized peoples, we can only conclude that 'human nature is always the same', and that both good and bad people always have existed, everywhere, and always will. But this leads to a further point, which has been suggested in a previous chapter, that among primitive and modern savages there is less variation of character than there is among civilized peoples, where the possibilities of individual development and expression are so much larger, and that as it is only among civilized peoples that examples of the highest moral grandeur

occur, so also it is only among them that the lowest depths of human wickedness have been reached. Thus savages and primitives may be called more moral than civilized peoples in the sense that they are more of a kind, and conduct among them is less individualized: as the verdict of Haddon on the Fuggians, quoted above, suggests, they are neither so 'good' nor so 'bad' as we are capable of being.

Civilization allowed the full development of individual character: it was also bound up, in its origin, with the development of class distinctions, and with the institutions of war and slavery. In savage, — in other communities, individual acts of violence must have occurred from time to time; but the picture some authors have painted of an original state of anarchy and rule of brute force is an imaginary one. No community could have survived, in which killing was not a matter of public concern. Moreover, sparsity of population and the continual pressing needs of the hunting economy would have allowed little leisure or opportunity for inter-communal strife or warfare. In late palaeolithic times there may have been some groups of greater ferocity and superior economic resources, who made organized attacks on their neighbours. But such raids must have been the exception rather than the rule; and like those carried out by modern head-hunting tribes, they were probably conducted scrupulously according to well-established rules, and with a minimum number of casualties. In short, warfare was a luxury that primitive man could not as a rule afford. But with the accumulation of property and great increase of population, which the domestication of plants and animals brought about, new motives and new opportunities for communal violence and aggression developed. Organized warfare became an 'economic proposition'. Instead of the barren triumph of a savage head-hunting expedition, a successful raid might lead to the acquisition of wealth, in the form of sheep and cattle and stored grain and metal tools and weapons. Also the extremely fertile corn-growing lands of the great river valleys, where the earliest cities grew up, — they were limited in extent, were a prize for the strongest, and a continual source of quarrels and warfare between the rising city states. In fact the earliest historical records we have in the fourth and third millennia B.C. show that civilization was born out of war, and bred and nourished on war. And so it has continued ever since, every increase of wealth and technical knowledge, and in the size of sovereign states, leading to a corresponding increase in the scope

and destructive efficiency of war. The chief difference between the ages of fully developed, and of nascent civilization and barbarism, is that in the earlier ages warfare and its accompanying evils were, so to speak, spread more evenly over all times and places and communities, whereas in later ages they have been more concentrated; so that some communities may escape them altogether for one or more generations, while at other times millions may perish, or suffer other evils, and whole countries be ruined, within a space of months. These longer intervals of peace have encouraged the optimistic idea that war is a 'relic of savagery'. That is a vulgar error. The sober truth is that organized warfare originated with civilization, and has grown up stage by stage with it ever since. As for the future, that, as I have already remarked, is wholly unpredictable.

Among primitives and savages individual status varies only according to age and sex and personal capacity. Man took the first step towards civilization by the domestication of plants and animals: he took the last step by the domestication of his own kind. The institution of slavery may have arisen immediately out of war, the successful raiders bringing back, instead of killing them, the human as well as the animal booty they had captured, and using them as an accretion to their wealth and power: in any case social inequality, and the division of the community into rulers and ruled, followed on the accumulation of heritable wealth by groups and individuals, and the organization of the state. As the economic basis of the earliest civilizations was an intensive system of corn production by irrigation, the basis of the social pyramid was provided by a class of peasant cultivators, who, whether they were legally slaves or serfs or freemen, were in fact a proletariat who were 'exploited' by an upper class of priests and scribes and kings and nobles and merchants and managers. It is probably true to say that the Egyptian or Babylonian peasant was far closer to the earliest uncivilized cultivators of the soil in thought and feeling, and even in his outward mode of life, than he was to his upper class contemporaries, who enjoyed all the refinements of the Egyptian or Babylonian civilization; and this same contrast is found in nearly every age and country, so that when we speak of 'history' and 'civilization' we are usually referring, not to the thoughts and way of life of all who have lived in civilized countries, but to the achievements and thoughts and manner of life of a comparatively small minority. For the

historian, who almost by definition is a member of a more or less privileged class, the question whether mankind has benefited by civilization may well appear ludicrous. Do not the shelves of his library provide the answer? But it is not so ludicrously obvious that all the millions of slaves and serfs, and of the poor and underfed who have always in the past provided the vast majority of the 'civilized' populations of the world, have advanced very far beyond the condition of the Eskimoes or Bushmen or other benighted savages, or that the naked hunter with his stone tools was worse off than the clothed field worker with his iron tools and chains. Surely the great miseries and cruelties and distresses which were everywhere the accompaniments of the classical civilizations, were responsible for the invention by some thoughtful and compassionate poet of that legend of the Golden Age before power and wealth raised some men up, and degraded others to the level of domestic beasts.

Civilization may be conceived of as a pyramid, the high achievement of the few being raised up and supported on the backs of the many. We may admire the height of the structure towering above the level plain of savagery, and argue that 'progress' is to be measured in terms of it. But 'progress' as a modern political ideal has a different meaning, and there is no reason for identifying the two forms of progress, or for regarding the latter form of it as a natural outcome of civilization as such. The ideals of liberty and equality, of improving the conditions of life for the majority, which progress in this sense involves, are peculiar to the peoples of the western European or Atlantic civilization, and are recognized and understood in other parts of the world only to the extent that they have been penetrated by the political tradition of the West. In most of Asia a different tradition still prevails, and in Russia, where serfdom was abolished less than a century ago, the Bolsheviks have reintroduced slavery in a new form, not, it seems, merely as a police measure to stifle opposition, but as a necessary part of their economic system, which has for its professed aim the establishment of a classless society. The democratic ideal, then, might be regarded as an attempt to reverse the original tendency of civilization to create a gulf between rulers and ruled; and this attempt, so far from falling in with the recent progress of science and technology, seems rather to be threatened by the new powers of control put into the hands of the state. The celebrated opening sentence of Rousseau's *Social Contract*, "man is born free but is everywhere in

chains", still remains a challenge to civilization, and to the optimism of Victorian liberals.

Recent archæological discoveries have demonstrated the very early occurrence of religious rites, and psychological and anthropological studies have emphasized the great importance of the religious sentiment in the social and economic life of uncivilized communities. It is probably not too much to say that religion, in the broadest sense of the word, is as old as humanity itself, and that the religious sentiment provided the original binding tie of the earliest social groups. It is also true (though some of the facts fall outside the scope of this book) that many of the ideas of the higher religions, ideas of mystic participation and communion, of the Fall of Man and his need for redemption, of Incarnation and a Saviour, and of prayer and sacrifice, are rooted in prehistoric rites and beliefs of immemorial antiquity. In the earliest civilizations the influence of religion was still paramount. That influence was first seriously challenged with the development of philosophical enquiry among the Hellenes, and in modern times it has been gradually diminished by the growth of scientific thought and secular education. Artistic creation is also much older than civilization, and in origin and in all subsequent ages except the last has been closely associated with religion. It may be questioned indeed whether any subsequent people has been more artistic than the Magdalenians, or whether the highest examples of Magdalenian art have ever been surpassed in their kind. Art, like religion, has been a characteristic feature of all the great civilizations, and the full possibilities of artistic creation, as of religious thought and ceremony, were only developed long after the establishment of the earliest civilizations. Yet it is at least arguable that in the various civilizations of the past the greatest periods of artistic creation, as of religious enthusiasm, came relatively early, that with the attainment of political maturity and emancipation of the individual intellect both art and religion tended to lose some of their force and sublimity, and that with their separation in modern times both have fallen into decay. We may conclude in any case that religion and art were the creation of prehistoric man, law and commerce and civil government of civilized man, and science and mechanical invention of modern man.

Different minds may draw different conclusions from the same set of facts, one arguing that religion is shown to be an essential

part of our humanity, another that its long, savage ancestry is evidence of its irrationality. Without venturing to take sides in that dispute, I will conclude by placing before the well-disposed reader certain *theses*, or topics for discussion:

1. Where is the greater psychical and cultural gap: between the savage, as represented, say by the late palaeolithic hunter, and his civilized successor, who still shared with him a fundamentally similar world of religious experience; or between the latter and the modern scientist, for whom the term 'supernatural world' has ceased to have any meaning?

2. Has the emergence of political freedom and the rights of individual conscience been due in part to the conflict of moral authority between church and state in the past; and are those rights and freedom liable to be put in jeopardy by the complete subservience of either of these rival authorities to the other?

3. Is the religious sentiment primarily a matter of belief in the supernatural, or of an emotional need and attitude which find their satisfaction in community rites and assemblies, whether in a church or a stadium; and is the decay of belief in a supernatural order the same thing as the decay of the religious sentiment, or something different?

4. If religion has in the past both given meaning to the life of the individual member of a society, and provided the social ends of the community with their binding force over the individual, does the decay of religious belief lead to social disintegration and purposelessness, and a collapse of moral standards; or can its place be taken by some other secular ideal or tradition, which will both satisfy the modern liberal ideal of freedom, and at the same time integrate the individual in the society of which he is a member?

5. Does art, or the highest kind of art, depend for its vitality on its association with religion; or may it rather, with the decay of belief in the supernatural, become to some extent a substitute for religion?

NOTES

¹ See G. Elliot Smith, *Human History* (rev. edn., 1934), Chap. V.

² *Op. cit.*, pp. 34 and 102.

³ *Man Makes Himself* (rev. edn. 'Thinker's Library'), 1941, *What Happened in History* (Pelican Books), 1942.

⁴ *Op. cit.*, p. 566.

⁵ See R. F. Harrod, *Britain's Future Population* (Oxford Pamphlets on Home Affairs, No. 55, 1943), where it is shown that the net reproduction rate in most countries of western Europe and North America has not been high enough, lately, for the population even to replace itself. The decrease is hidden, for the time being, by the parallel increase in longevity. But the time will soon come, if the same trend persists, when there will not only be fewer young people relatively to old people, but fewer people of all ages.

⁶ It is true that some classes and communities in the past have controlled their natural increase of population by infanticide, or forms of birth-control. But this deliberate limitation was generally practised where the food supply was also limited, and as an alternative to famine; whereas the essence of the modern practice is that it coincides with a rising standard of living for the bulk of the population.

⁷ See H. V. Vallois, *loc. cit.*

⁸ *Op. cit.*, p. 571.

⁹ Quoted from H. Levy, *A Philosophy for a Modern Man* (1938), p. 190. It is indeed strange that Mr. Levy, who on p. 95 of his book draws attention to the fact that each phase of history has its own set of cultural customs and beliefs, fails to recognize the historical relativity, both of his own political beliefs, and of the 'scientific' arguments with which he attempts to justify them.

¹⁰ Cf. *Man Makes Himself*, p. 14.

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As I do not pretend to have written a text-book, I have not attempted to support my statements throughout with an elaborate system of references. Similarly a complete and detailed list of all the books and articles in periodicals that I have at any time read or consulted, and covering all the aspects and departments of this very wide subject, would be out of place, and might put some strain on my honesty as well as my memory. On the other hand some indication of the ■■■■■■ of information I have relied on, and of the general background of my thought and writing, seems desirable, and I have therefore drawn up a select bibliography, arranged under separate headings. No exact system of classification is possible, or has been attempted; but the headings provide a rough guide to the several divisions of the subject-matter.

A.—PERIODICALS

Most of the archaeological detail has been taken from periodical publications. Some of the most important articles I have made use of have been specified in the Notes; but my debt is of too wholesale a kind to be given in detail, and I therefore merely give a list of such publications, paying a tribute in the first place to the great French periodical

L'Anthropologie,

which has been my mainstay in following the *mouvement scientifique* of recent years over the whole field of archaeology, anthropology and ethnology. In a more restricted field my debt has been almost as great to three English publications:

Antiquity

Proceedings of the Prehistoric Society N.S.

Reports of the Annual Meetings of the British Association for the Advancement of Science.

I have also made use of the following:

American Anthropologist

Annals of Eugenics

British Journal of Psychology

Bulletin de la Société préhistorique française

Iraq

Journal of the Royal Anthropological Institute

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